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LIGHT ⁘ HEAT ⁘ POWER ⁘ BYE-PRODUCTS

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EDITORIAL NOTES.

Prospective Gas Legislation.

By permission of the National Gas Council (granted at our request), we are able to reprint to-day, from the monthly report of the Central Executive Board, a striking Memorandum prepared by them explaining the necessity for amending present gas legislation. This is a subject which has been kept prominently before readers of the "JOURNAL"—first, by articles emphasizing the importance of formulating a definite policy for the future, which for its development would involve the realization of amending statutory powers, and extension by the creation of new ones. Subsequently, articles appeared in our columns which indicated the scope of new legislative enactments which the National Gas Council considered would be advisable. Now we have in the Memorandum the concrete case presented for such amendment; and, in our opinion, it is an impregnable one. While the Council are fully aware that much of the old legislation is now obsolete or needs drastic modification, such work would be too big to allow of prompt treatment by them or by the Board of Trade and Parliament. The industry cannot wait—time, opportunity, and necessity press. They are, therefore, only proposing to urge, for the time being, the need of those matters which should be subject to consideration immediately by the Board of Trade and Parliament, in order to enable the gas industry to pursue a policy of development in the interests not only of itself, but of the community generally. Of this we are confident—that at the back of the National Gas Council there will be found the whole-hearted support of the gas industry. This was reflected by the very cordial endorsement given to the outline of the plans which the President (Mr. D. Milne Watson) submitted at the last annual meeting.

The End in Sight.

THE quixotic adventure of Messrs. Smith, Cook, & Co. is drawing to a close; and they have to confess that the only logical end is being achieved, notwithstanding that they have managed to do nothing creative, other than what constitutes disaster for the coal industry, their dupes, and the country at large. It is to be hoped, however, that the huge losses that have been incurred have not been wholly destitute of some good, through the educating of the country and its industrial workers to the fact that there are laws and conditions which refuse subjugation to the wills and decisions of fanatical leaders such as those who have been foremost in this struggle. The pity of it is that there are men among the leaders who did know that the wrong policy was being pursued, but who sat throughout like mutes. Their passivity is as much in fault as the activity of the wild man of the Federation, who has throughout led its President and others along tamely by their noses. When the Executive learned that the Government had rejected the latest proposals of the Federation, that they were tired of the whole business, that they were not prepared to depart from the Prime Minister's terms of the 17th ult., that they had resolved those terms should not remain open indefinitely, and that they advised that the Federation should take the practical step of ordering district negotiations subject to subsequent revision by an independent tribunal where any departure from the old hours was made, then the members began to stir themselves, for they knew the end was not far off. Confession followed that the fight had been lost, and that a settlement of some kind must be effected. And this after the miners have lost in wages through the stoppage something like £68,000,000; while the cost of maintenance to the owners has been fully £10,000,000; and while the national loss in the way of poor relief, increased unemployment benefit, and the other directions in which the State has been affected by the stoppage is calculated to exceed £250,000,000. All this without including anything for loss of trade. The silly talk about the miners having been beaten by starvation is simply part and parcel of the extravagances which have accompanied this struggle from the mouths of the men's leaders from the first. It is because there has been no starvation, and much humanitarianism, that the strike has lasted so long. We have it on the authority of Mr. Richardson, the Treasurer of the Miners' Federation, that the total of the subscriptions towards the relief of the miners, and thus in support of outrageous demands, is £1,261,000, of which £1,257,000 has been spent. That sum is naught to what it has cost the country to maintain the dependants of those who are, at the behest of a handful of men, striving for the impossible, and attempting to ruin the coal industry of the homeland.

The miners themselves, however, are awakening to the fact that they have been misled; and last week saw a further breakaway, which caused consternation at headquarters. What had happened before was bad enough; but by Friday it was computed that the total number of men at work had reached 164,587, and, including safety men at collieries which have not yet restarted, there were probably 200,000, or about one-fifth of the number employed at the time of the stoppage. There is anticipation that the acceleration of last week will gain in momentum this—more especially as the news is getting round that, under the individual agreements made with the men, there is good money to be earned, which is another nail in the coffin of the national agreement.

During the week there were meetings of the Cabinet, a discussion in Parliament, a meeting of the Executive of the Miners' Federation with the General Council of the Trade Union Congress on the subject of hours, a conference at Ostend with the International Miners' Committee, and the opening by Mr. Ramsay MacDonald of the Labour Party's campaign on behalf of the miners. These eleventh-hour proceedings will avail little. The British representatives who paid a flying visit to Ostend, did not find the miners' representatives of other countries any more pliable. They could not accede to a request to help by strike action on an international basis; they promised, as before, to do what they could financially, and to exert the maximum effort to prevent the export of coal. This means that, so far as they are concerned, things will go on much as before. The British miners' representatives went by air, and, we believe, returned the same way; and they brought nothing back but the recollections of the incidents of the trip. One object of their mission was to try to deprive Mr. Frank Hodges of his official position in the International Federation. The best friend and most sentient counsellor the miners of this

country and other countries ever had is Mr. Hodges; and the day will arrive when there will be recognition of this.

The most important event of the week was the conference of the miners' delegates. They met in very chastened mood, being confronted by the knowledge that those who had taken the lead along the road to ruin had publicly acknowledged defeat. Their sittings continued over two days. It is easy to picture that there were some ugly things said during the several hours of conference; but the outcome was a decision to refer to the districts the Government proposals for local settlements, subject to review by a national tribunal in the case of settlements involving an increase of hours. But again we are faced by the fact that, whatever the miners may vote for, there is no knowledge that the owners will accept a national tribunal to review those things which are mutually agreed upon in each coal area. What will be the attitude of the men in connection with the reference cannot be said at the time of writing. It is predicted by some that we may witness the paradox of the men voting collectively for a national settlement, and yet returning to work at an accelerated pace on individual agreements, now that they learn that their leaders acknowledge the game is up. The districts are to consider the report upon the Government proposals in time for a further delegate conference to-morrow. The best thing the men can do is to take no notice of the reference to them (many are doing this), get back to work, and refuse to have anything more to do with leaders who have made their position worse than it was before. It is perfectly clear that it will be a long time before the whole of the men will be required. There was a surplus before the stoppage; that surplus will now be greater. Many of the men who have offered strong resistance to the eight-hour shift will be glad enough to work it when the truth dawns upon them, and sobers down the brains which have been intoxicated by the doctrines, aspirations, and promises of Cook and his confederates. Those, too, who have stoutly said they will not negotiate except through a national settlement will find that they are not the only element in what must be, and that they will ere long be glad enough to settle something on their own account. Those also who have been indulging in intimidation, and calling men traitors who wisely have already returned to work, will not be among the last to apply for employment. If any have to be left without, we hope those who have been intimidating will be among them. To be traitors to country and home is worse than withdrawing allegiance to those who have proved themselves totally unfitted to be leaders of men.

Relation between Coal Analysis and Carbonization Products.

Greater study is now being made of the physical and chemical properties of coal for carbonization purposes than was the case at one time of day, with the result, as frequently happens when old methods are subject to scientific probing, that the faith in what has been is becoming somewhat shaken. The proper appraisement of coals for carbonization purposes is a matter of real importance to the gas industry. In this issue we have an article, by Mr. S. Qvarfort, the Chief Chemist of the Warta Gas-Works, of Stockholm, which deals with the relation between coal analysis and carbonization products; and it is a highly instructive contribution. Last March, we published a series of articles by Dr. Geoffrey Weyman on the examination and evaluation of coals. And the Gas Investigation Committee of the Institution of Gas Engineers and the Leeds University have cognate work in hand. Out of all these studies of the chief raw material of the industry, methods and information will undoubtedly be evolved which must have an important bearing upon the efficiency and economy of our carbonizing operations.

In Dr. Weyman's contributions last spring, he described a method of evaluation of coals for carbonizing purposes which, he thinks, could be generally adopted if consideration is given to the point that adaptation involves modification according to the varying standard of the coal available from the different fields. Now Mr. Qvarfort considers the relationship between the analysis of coal and the yields of carbonization products; and, in the early part of the contribution he shows, what is now generally accepted, that there is no such definite relationship. Among the ideas which are being renounced is the one that the higher the volatile content of the coal, the greater the quantity of gas, and the higher the calorific value, that can be obtained; ultimate analysis of coal having driven investigators to the belief that the greater its oxygen content, the lower the calorific value and the gas yield. Moreover, research has shown that the physical conditions under which coal is carbonized also affect (apart from the information conveyed by an analysis) the productive capabilities of a coal during carbonization. The fact that the conditions of a charge and the methods of carbonization alter the production results will perhaps somewhat modify Mr. Qvarfort's conclusion that curves can be obtained which express the relationship between an analysis of coal and the yields of carbonization products. But this does not in any degree discount the interest and value of the results of the investigation he has made. His contribution to a question in which there is a lively interest among gas experts will, in addition to its intrinsic merit, be an incentive to continued research. One can readily accept his submission that curves can be obtained which express a relationship empirically between the analysis of a coal and the yields of the products, under a definite system of carbonization.

At the Stockholm Gas-Works, there is an excellent test plant upon which our contributor has been testing about fifty different coals; and it is from the results that he has demonstrated that, by means of empiric diagrams, the proportions of the products may be predicted—the coke yield (but not the quality); distribution of sulphur in gas and coke; yield, specific gravity, calorific value, and composition of the gas; and the yields of benzole by oil washing. The yields of tar and ammonia, however, show no relation to the coal analysis. The difficulty of giving a positive reason for this is admitted, but we hope that Mr. Qvarfort will pursue his investigations into this particular matter. Of course, there are known factors—such as temperature and moisture—which affect both these products. But, as is pointed out in the article, these factors are constant in the test plant, and so offer no solution. In this relation, too, the physical condition of a charge should not be ignored. Our contributor suggests that the tar seems to be dependent on the content of hydrogen as well as of oxygen in the coal, and the quantity of tar produced possibly increases as the amounts of these elements become greater. If he is continuing his investigations into these matters, we would suggest that he should read the Sixteenth Report of the Gas Investigation Committee and Mr. Rhead's paper which were published in our Institution Number last week. Although those contributions have no positive parallel, there is a relationship with the work at Stockholm to ascertain how near diagrams constructed from coal analysis can be made indicative of the products of carbonization. As to ammonia, though one might expect to obtain a high yield if both the hydrogen and the nitrogen contents of the coal are large, this by no means follows, for a third factor must be considered—the oxygen may combine with the hydrogen in the coal. Thus, as is pointed out, the formation of ammonia decreases as the oxygen in the coal becomes greater. The formation of tar or ammonia seems to be a function of no single element in the coal.

However, we must leave Mr. Qvarfort's study, his diagrams, and his tabulated statement, which are the essence of a vast amount of industry and painstaking work, to the experts who are engaged on the study of coal in relation to carbonization products. Let us emphasize this, however: Our contributor does not suggest that his work is the last word on the problem of the relation of coal analyses to the carbonization products. He has made an attempt to establish a relationship graphically. But what he has achieved has its limits—though conformity between analyses and carbonization products is good in some respects, the diagrams, he modestly submits, may only be useful as a rough indication for different coals. But there is value in this study beyond the actual production of the diagrams for the purpose in view. We are sure that the contribution will receive the wide attention it merits.

Centenary of Gas Supply in Berlin.

Berlin has just been celebrating its centenary of gas lighting; and the functions were on a scale befitting the occasion. There can be the heartiest of congratulation to the Gas Betriebs Geseilschaft upon the excellence of their programme; also recognition of their courtesy in inviting to go and rejoice with them representatives of the Board of the Imperial Continental Gas Association, the Institution of Gas Engineers, and the Gas Light and Coke Company (whose centenary we were celebrating fourteen years ago). This shows no envy or other uncharitable reflection regarding the fact that it was due to British enterprise and capital that gas supply was established in the capital city of Germany. On the contrary, there could be no celebration of such a centenary without the acknowledgment that the inception of gas supply in Berlin was due to the Imperial Continental Gas Association. But if it was British capital that gave Berlin its first gas supply, it was German capital which developed Perkins' great dye discovery, when British capital failed him. However, not only was acknowledgment freely made of the originating enterprise of the "I.C.G.A.," but there was brought into view the firm manner in which the high traditions and standards of that organization were implanted, and which created a strong bond between the administration in London and their executive officers, staffs, and men in Germany. The bond has been severed; the memories of it remain, as do also the traditions and the standards. Some of the most eminent gas engineers Germany has possessed or now possesses worked for, or were schooled and trained in the works of, the "I.C.G.A." Though Berlin cannot claim quite so remote a birth year for gas supply as London, it has vied with us in gas-engineering accomplishments—especially at the Mariendorf Works, to which pilgrimages have been made by gas engineers from all quarters of the globe. We remember the eminent services which engineers bearing the names of Drory, Korting, Oechelhauser, Bueb, and others have rendered to gas engineering, and Bunte in the realms of gas chemistry and physics. Their work is writ large in the history of the industry. It has been an inspiration to gas engineers of other countries, just as the work of gas engineers of other countries was an inspiration to them, or is to their successors, as the case may be. There was in days past a spirit of co-operation and friendly rivalry. To that useful co-operation Mr. A. F. P. Hayman, of Antwerp, representing the Institution of Gas Engineers at the centenary banquet, bore testimony; and we emphasize his hope that there will be greater co-operation in future. Science and the arts have no national boundaries; and there is none to the intercourse of gas engineers throughout the world. The universal progress of the gas industry by all methods that can be applied is their aim, no matter the source of new discovery or other advance. We learn from each other; so knowledge expands to the benefit of the industry and the public it serves. However, this arises by the way from the gas-supply centenary celebrations in Berlin, which arouse recollections of long years ago, and give birth to new anticipations for the future.

Inform the Public.

Many gas undertakings have been forced to increase the price of gas, owing to the cost of imported coal. Some have found occasion to revise their first estimates of the revenue that will be required in view of the prolongation of the strike and the needs of the situation, and have had to announce that the advance in charge to the consumer will have to be higher than was at first notified. Wherever this happens, all undertakings should, through the channels of local publicity, give a plain explanation as to the causes. The general public do not appreciate the position. The availability of gas, through its constancy, is taken by them as a matter of course. The difficulty of keeping it available is not thought of by them. They will no doubt expect that, as soon as the miners' strike collapses, all will promptly become normal for gas undertakings. A few simple facts will clear away any ignorance that may exist in this regard. The public little appreciate that considerably more than half of the millions of tons of coal used in a year by the gas industry is required during the winter, when, through fogs and the inclemency of the weather, transport is more difficult than at other times of the year. They are probably not aware that, in view of this, huge stocks of coal have to be provided before winter comes, in order to maintain the supply of gas in any circumstances. It certainly does not occur to them that, though the strike is likely to be over soon, there has been no British coal available for stock-building; and therefore what stocks have been accumulated are due to the incoming of foreign coal, the cost of which, with freights, has been on the up grade. Besides, in a country accustomed to coal exports, and not coal imports, the difficulties of handling have been great and expensive. Therefore, preparations for the winter will not allow increases in the price of gas to be taken off immediately the coal strike ends. There is a big rush for British coal for home needs. This will continue; and the price for a period will be anything but normal. For a time, foreign coal may still have to be purchased; and contracts already made as a precaution will have to be completed. But, through any publicity made of these matters, the public may be assured that, especially in the case of companies working under the sliding-scale, the increase will be removed from the price of gas as early as possible. So long as it remains, the dividends of such companies will suffer somewhat. Explicit information on all these matters should be made to the public. Many electricity undertakings have had to increase their tariffs; but the industry has commenced its great six months' wiring campaign, and is out for the utmost publicity.

We are not anticipating that an increase in the price of gas will, of itself, do much to cause consumers to economize in its consumption; but as things stand, with the season of maximum demand approaching, the advice of the Emergency Committee of the Central Executive Board of the National Gas Council is good—that gas undertakings should urge consumers to co-operate with them by economizing in every possible way. The appeal may have some effect, though, we fear, not a great deal in view of the shortage of coal and its cost. However, in this matter those undertakings in the position, through favourable geographical location, or other resources, to secure the supplies they need will remember that any economy in the use of the raw material they can effect may be of advantage to gas undertakings which, through adverse geographical position, have a struggle to obtain sufficient coal to maintain their service. Such undertakings supply areas in which the residents also have difficulty in procuring coal.

Coal Distributors and Smoke Abatement.

An interesting official notice has reached us. Coal retailers are beginning to be genuinely alarmed by the activities that are causing a sensible erosion of their business in household coals. We do not blame them—if they consider only self-interest, and not public advantage—for taking active steps to try to stop a more civilized condition of things coming over the land; but we would ask them to fight fairly and squarely, and to put the responsibility for their anxiety upon the right motive. The notice tells us that a number of leading coal distributors have formed an organization for mutual protection in respect of legislation introduced into Parliament which threatens the interests of the trade. The organization is styled the Coal Distributors' Parliamentary Committee. Their immediate duty is to initiate steps "with a view to counteracting the publicity campaign on behalf of gas and electric light interests, which is usually referred to as the smoke abatement movement." We do not like the use of the word "usually" in the foregoing quotation; there is a smack of derision in it, which is not nice. The coal distributors appear to want to make the public believe that the movement possesses only one object—that is, the promotion of the interests of gas and electricity. This is evidenced not only by the passage quoted above, but by the succeeding one. It says: "The object of this publicity is to induce Parliament to insert an amendment in the Public Health (Smoke Abatement) Bill, which, if carried, would have the effect of permitting public authorities to refuse permission for open grates to be

"built in new houses, the occupiers of which in such an "event would be forced to use gas or electricity for "lighting and heating."

This concentration on gas and electricity is mere bluff. The coal distributors know it to be so, and that the real motive for the smoke abatement movement is the growth of scientific knowledge and medical opinion that the pollution of the atmosphere by the emanations of chimneys where raw coal is burned is detrimental to public health and to our structural and other possessions. Learned societies have emphasized this; successive Governments have recognized it; the Royal Coal Commission make a point of the production of smokeless agents for heating; the Miners' Federation in the scheme presented to the Commission condemned the use of crude coal, and proposed that it should be treated at the pithead for the production of gas, electricity, smokeless fuels, and chemicals; the Government have appointed a Fuel and Power Committee, who cannot avoid taking the question of smokeless heating into consideration; and the public are beginning to realize that it is not right that the air they take into their lungs should be adulterated by the filth that comes from the combustion of raw coal. The Coal Distributors' Parliamentary Committee are of opinion that, when the public became aware of the attack upon their liberty which it is proposed to make by amendment of the Smoke Abatement Bill, considerable opposition will be manifested, and will be communicated to members of Parliament. Probably, however, the public will show wisdom by considering that it is better to exercise control over a condition which assails the health of the nation and the amenities of life than to permit its perpetuation. We are afraid the coal distributors are—too late. Progress from crudity to civilization cannot be stayed in the interests of the coal distributors. What they want is a continuation of the use of crude coal; the cumulative injury of this being to them a small matter.

The Tale of 1925.

Good technical and trading progress is revealed by the data in Part I. of the Board of Trade Returns relating to all statutory gas undertakings in Great Britain for 1925. An industry which can show advance in the efficiency of its manufacture, and at the same time is building up largely the aggregate of its connections, is in a sound way of business; but in the case of the gas industry, there has to be some little discount for a time when the secondary products were not in such good demand, and market values were therefore depreciated. Nevertheless, it is a matter for congratulation that in the primary business (which is the one subject to the greatest competition from coal, electricity, and oil) continued advance is shown by the official statistics. We should preface their examination by saying there is little difference in the number of undertakings dealt with in the returns. Some half-a-dozen were absorbed by larger concerns during the year, and three additional small ones came on to the statutory plane; the number of concerns dealt with in this return being 781, compared with 784 in 1924. Therefore, there is little in the changes to vitiate comparison.

In the first place, it is observed that the quantity of coal carbonized was 17,031,172 tons, or 298,008 tons less than in 1924, which, a larger business in gas being done, shows that the industry was in a position to assist considerably in the process of coal conservation. It is true that to some extent this was owing to the reduced demand for, and consequently value of, coke, which led to as much as 1,153,413 tons being used in water-gas manufacture, or an increase of 177,047 tons on 1924. This, by the way, may probably be regarded as a comparatively small additional utilization, in view of the fact that the total coke production was 11,398,382 tons. On the other hand, it is observed that 61,382,649 gallons of oil were used in the manufacture of water gas—an increase on 1924 of 15,922,040 gallons. So much for raw materials. The total gas made was 283,818,308,000 c.ft., which was an increase on 1924 of 8,592,469,000 c.ft. Of the total, coal gas accounted for 231,347,681,000 c.ft.—a reduction of 538,355,000 c.ft. The make of coal gas per ton of coal carbonized averaged 13,583 c.ft., or 202 c.ft. per ton in excess of the average production in 1924. Regarding water gas, the total made was 48,173,291,000 c.ft., which was an increase of 8,905,071,000 c.ft. In view of the fact that all undertakings are not yet under the therm system, it is impossible to deal with the total figures from the thermal point of view. So much, however, for the data referring to manufacture.

The gas-trading statistics are of an equally satisfactory nature. In 1925, the total sale amounted to 265,757,353,000 c.ft., which was an increase on 1924 of 8,865,431,000 c.ft. If we look back to 1921, we see that the sale that year was 229,077,112,000 c.ft.—the increase in the five years being 36,680,241,000 c.ft. The average for the five years is 7,336,048,200 c.ft. Thus it will be seen that the increase of 1925 made a remarkable showing above the average of the five years. The advance in sales last year was about equally divided between the ordinary and the prepayment classes of consumers. The ordinary consumers purchased 163,059,081,000 c.ft., or an increase on 1924 of 4,310,163,000 c.ft.; while the prepayment consumers, in using 92,747,287,000 c.ft., took an additional 4,207,535,000 c.ft. The public lamps also contributed to the increase by requiring 9,950,985,000 c.ft., which was more than in 1924 by 347,733,000 c.ft. The total number of consumers in 1925 was 8,200,455, which was an increase on 1924 of 206,669. The ordinary consumers, numbering 3,753,837, increased in the year by 100,634. The prepayment consumers, numbering 4,446,618, increased by 106,035. Five years ago (1921), the total number of consumers was 7,583,130, so that the 8,200,455 of 1925 is a considerable advance. The average increase of consumers for the five years is 123,465. Therefore 1925, with its 206,669, was a good year in the production of additional consumers and extra gas business. In 1921, the average consumption per consumer was 30,208 c.ft.; in 1925, 32,407 c.ft.—an average increase of 2199 c.ft. That is the line of real progress. The distributing power of the industry has also been enlarged by the mileage of mains having grown from 41,985 in 1924 to 43,178 in 1925—an extension of 1193 miles. We are thoroughly pleased with the tale of Part I. of the Board of Trade Returns for 1925.

Gas Examiners and Gas Testing.

There has been an inquiry by Sir Richard Glazebrook, F.R.S., the Chief Gas Examiner, into certain grievances regarding the tests made of the gas of the Wandsworth, Wimbledon, and Epsom District Gas Company. The matter was under consideration on an appeal by the Company in circumstances which were fully explained to Sir Richard. We will not comment on the case beyond saying that, in the making of tests, there should be at all times a close compliance with the prescriptions laid down for the purpose. It will be found from our report that the issues involved are of considerable importance to all gas undertakings, as well as to gas examiners, working under the Gas Regulation Act. We will leave it there, as the statement which Mr. Jacques Abady placed before Sir Richard, and that made by Mr. Emerson Smith, the Town Clerk of Wimbledon, are so explicit and to the point that, standing alone, they carry their lessons to all concerned. The Company rendered good service to the gas industry by submitting the matter to the Chief Gas Examiner.

Gas Supplies in Winter.

Some of the daily newspapers—realizing how much the country owes to the gas industry for the maintenance of a supply of gas for heating purposes during the long coal stoppage—have been a little concerned as to how gas supply would be affected if, in the major part of the coal areas, the cessation of coal production continued. Their inquiries have elicited the information that there is no reason to anticipate any diminution of the gas supply, but the cost of maintaining it, owing to the expense of coal from abroad, will be heavy, and naturally this will have to be met through the price of gas. The public may rely upon it that the gas industry will not "let them down," unless something unforeseen happens. But there is a general hope that the whole body of British miners will before long see the futility of remaining idle through the foolishness of their leaders.

Export of Pitch Prohibited.

The Board of Trade, under date of Oct. 5, and in exercise of the powers conferred upon them by the Emergency Regulations (No. 6), 1926, have prohibited the shipment of pitch for exportation, except under such conditions as they may by their licence allow.

Promoting Finesse.

It will be interesting, after all we have said regarding the various promotions in which the Baronet Soame, Major Brigden, and others are concerned—which promotions include the Southern Counties Electric Light and Power Supply Company, Ltd.—to learn that a new method of disposing of shares has been adopted. Dated October, 1926, a circular-letter informs the recipients that the Company have just had placed in their hands for sale £1000 of their own 7 p.ct. first mortgage debentures. Why they have been "placed" in the Company's hands is not explained. However, they can be disposed of in multiples of £10, at £9, fully paid. It is stated that the purchasers will be entitled to the accrued interest, and that, at the price of £90 p.ct., the investment will yield over 7 p.ct., excluding the premium of 5 p.ct. payable at redemption—that is to say, when redeemed, with an emphasis on the "when." The price the Company are "instructed" to sell at is free of all commission to the purchaser and transfer fee. By the same means, they are also offering a "limited number" of 8½ p.ct. participating preference shares at £1 each. Those who require an investment are asked in the circular: "Please notify us if you desire to apply for same." We do not anticipate that anybody will trouble to notify the Company if they do not desire to apply; if they had the desire, they would apply. But we hope there will not be anyone foolish enough to lumber up himself with a further supply of unnecessary paper.

Coal Imports.

In the "JOURNAL" for the 15th ult. (p. 591), we gave a statement regarding the quantity of coal imported, together with the value up to the end of August. The "Iron and Coal Trades Review," commenting on these figures, referred to the extraordinary fact that the quantity of coal imported in August—viz., 3,970,442 tons (value £7,542,847)—exceeded by no less than 698,332 tons the amount which, in the corresponding month of last year, was exported from this country. In August, 1925, the exports amounted to 3,272,110 tons; while last month the imports were the largest in any month since the stoppage of coal production began.

Foreign Coal Outputs and Exports.

Since the beginning of the British coal strike, it is stated that the exports from the United States have risen from 1,516,710 tons in May to 2,139,166 tons in June, and 3,240,194 tons in July. The additional demand for American coal has been almost wholly due to European requirements. The quantity shipped in May totalled 165,363 tons, compared with 1,781,153 tons in July. Of the latter amount, this country is credited with taking 1,520,686 tons. The charter bookings for August and September, it is also reported, account for 5,820,000 tons capacity. It is learned that the total output of coal in Germany in July reached 12,864,000 tons. This is the highest monthly output this year, and exceeded the 1925 monthly average by about 1,981,000 tons.

Large Increase in Gas Oil Imports.

The large recourse which is now being had by the gas industry to C.W.G. is exemplified by the increase in the imports of gas oil. During the month of August, no less than 14,017,376 gallons were imported. This figure compares with 4,602,014 gallons in August, 1925. In the eight months of the year, 62,803,048 gallons have been received, as against 47,429,362 gallons in the corresponding period of 1925.

Coal Exports.

The Board of Trade export returns for August show that 2184 tons of coal were sent abroad; the major part being anthracite and steam coals. Of this, 1000 tons (small material) was for Spain, 828 tons for the Irish Free State, and 341 tons for Canada. The value was £3422, which averages £1 11s. 4d. per ton. In August last year, the business done abroad was represented by 3,272,110 tons, of a value of £3,159,952; and in August, 1924, 5,074,744 tons, of a value of £5,732,629. The tremendous loss which has been incurred is better shown by taking the eight months of the year ending August. In that period, 18,973,654 tons were sent abroad, as compared with 33,562,809 tons in the corresponding months of 1925, and 41,693,690 tons in 1924. Thus we see that, compared with last year, the export coal business has suffered a fall of 14,589,155 tons compared with 1925, and 22,720,036 tons compared with 1924. The values of the exports in the three periods were: 1926, £17,240,336; 1925, £34,537,380; 1924, £50,099,242. Thus, compared with last year, the loss of export coal business, on the values given in the returns, is upwards of £17,000,000 in the eight months.

Gas Coke Shipments.

The shipments of gas coke in August were only 2955 tons, the value of which was £2931; being an average of a little short of £1 per ton. In August last year, 96,518 tons were sent abroad; the value being £91,111. In August, 1924, the business was represented by 105,714 tons, of a value of £186,307. For the eight months, the exports amounted to 383,395 tons, of a value of £395,408. In the corresponding period of 1925, the exports were 368,027 tons, and the value £453,771; in that of 1924, 613,533 tons, and the value £1,073,766

Tar Products.

Of benzole and toluole, only 725 gallons were sent abroad in August, compared with 1753 gallons in the same month of last year. In the eight months, 419,532 gallons were exported, as against 140,753 gallons in 1925. The shipments of naphtha in August amounted to 1343 gallons, compared with 4873 gallons in 1925. In the eight months, 58,054 gallons were shipped, as against 35,573 gallons. Tar, oil, creosote, &c., were represented by an aggregate shipment last month of 1,537,126 gallons, compared with 2,537,925 gallons in August, 1925. For the eight months, the total was 32,989,278 gallons, compared with 30,398,441 gallons.

Sulphate of Ammonia.

August showed a decline in sulphate of ammonia business abroad. Only 10,757 tons were exported, compared with 19,982 tons in August, 1925. In the eight months, the shipments amounted to 133,958 tons, compared with 176,044 tons in the corresponding period of 1925, which is a reduction of 42,086 tons. No custom has been forthcoming from France. Spain and the Canaries have been our best buyers so far this year with 35,091 tons; but this compares with 84,268 tons in the same period of 1925. Japan comes next; business with that country having increased from 23,323 tons in the eight months of 1925 to 34,379 tons in the same period of this year. The Dutch East Indies ranks third with purchases of 19,454 tons, as against 17,060 tons in the eight months of 1925.

A Slight Improvement in Unemployment.

On the 13th ult., the registers of employment exchanges in Great Britain showed that the total number seeking employment was 1,551,900. This is less by 7635 than in the preceding week; but 224,263 more than a year ago. The total of 1,551,900 is exclusive of persons who ceased work in the coal-mining industry on account of the dispute. On the 20th ult., the number on the registers was 1,532,400, or 19,524 less than the previous week, and 220,442 more than a year ago.

Mr. Job Seymour Cranmer, for 41 years Engineer and Manager of the Stratford-on-Avon Gas-Works, left estate of the gross value of £5208, with net personalty £4220.

PERSONAL.

Owing to the expiration of his lease at Howard House, Arundel Street, Mr. Walter R. Herring, M.Inst.C.E. (consulting engineer), has removed to 112, St. Stephen's House, Victoria Embankment, Westminster Bridge, S.W. 1. His telephone number is "Victoria, 9440."

Mr. T. H. Prater has been appointed Works Superintendent to the Isle of Thanet Gas Company, Margate. He was previously Technical Assistant at the Tottenham Gas-Works, and was, it will be remembered, successful in 1925 in gaining the Institution's First Class Diploma.

A meeting of the officials and workmen employed at the Tipton Gas-Works was held last week for the purpose of making a presentation to Mr. William Prince, Engineer and Manager for about twelve years, who is now leaving. The staff and employees had joined together, and had purchased a valuable platinum and gold Albert watch chain as a testimonial of appreciation. Mr. John Mansell (foreman), who made the presentation, said they had met to pay their respects, and to give Mr. Prince a token by which he might remember them in the years to come. Mr. Prince, in replying, said he came to the works on the eve of the war. During his time of office they had passed through two long coal strikes. Through it all, the men and staff had been loyal. He hoped they would be as loyal to his successor as they had been to him. If they were, he had not the slightest doubt that they and Mr. Macfarlane would get on well together.

Mr. James Dingley, the Assistant Secretary of the Birmingham Gas Department, who has occupied that position for 26 years, and who was previously for 16 years in the Department of the Town Clerk, will retire on superannuation in a few weeks' time. At a meeting of the Gas Committee last week, Alderman J. H. Lloyd, the Chairman, expressed warm appreciation of Mr. Dingley's services to the Department.

FORTHCOMING ENGAGEMENTS.

[*Secretaries of Gas and Kindred Organizations are asked to assist in making this diary of events as complete and useful as possible by sending the earliest intimation of all meetings.*]

Oct. 8.—North of England Gas Managers' Association.—Meeting at Hexham.

Oct. 9.—Western Junior Gas Association.—Inaugural meeting at Bristol.

Oct. 9.—Manchester and District Junior Gas Association.—Visit to the Bury Gas-Works.

Oct. 9.—Scottish Junior Gas Association (Western District).—Meeting in the Royal Technical College, Glasgow. Mr. J. Hall will deliver his Presidential Address.

Oct. 12.—National Gas Council.—Meeting.

Oct. 12.—Federation of Gas Employers.—Meeting.

Oct. 21.—Midland Junior Gas Association.—Meeting at Birmingham.

Oct. 21.—Murdoch Lodge No. 3480.—Meeting.

Oct. 23.—Scottish Junior Gas Association (Western District).—Visit to the Granton Gas-Works, Edinburgh.

Oct. 25, 26, 27.—British Commercial Gas Association.—Annual conference at Newcastle-upon-Tyne.

Nov. 12.—Southern Association of Gas Engineers and Managers.—Meeting at the Hotel Cecil.

Dec. 7-8.—Institution of Fuel Technology.—Meeting.

Feb. 16.—"B.C.G.A." Midland District Conference.

Institution of Gas Engineers.

Oct. 11.—Emergency Committee. Finance Committee.
Oct. 12.—Advisory Committee on Education.

ELECTRICITY SUPPLY MEMORANDA.

It is observed that our electrical contemporaries are hinting that the gas people are responsible for stirring-up strife on the Eltham Housing Estate. As will have been seen from references to the matter in the "Journal" recently, if the gas people did this they were pretty successful. But we suggest to our electrical contemporaries that, in alleging direct responsibility by the gas people, they are slandering the South Metropolitan Gas Company. Our electrical contemporaries are not deeply logical. Let us put it to them in the first place that, if electrical cooking was all that it is represented to be by them, then the high efficiency and economy of it would have made 313 of the tenants proof against signing a petition seeking for relief from being chained to electrical operation, and for the ordinary liberty of householders. Cost and slow operation are their grievances; and these are the real instigators of the agitation. The electrical papers do not look at the matter in this light; they prefer, with a reckless disregard of honesty, to divert attention from the truth, and to suggest that their is nothing in this Eltham revolt other than the hand of the gas man. The testimony of the tenants as to the costs of electric lighting and cooking reaching sums per week which their wages cannot stand, is kept in the background. "Meteor" of the "Electrical Times" says that the electrical condition in the tenancy agreement "infuriated the partisans of gas; and, after some months of propaganda, a petition was drawn up to protest against the refusal of the Housing Committee to allow gas to be introduced." Is "Meteor" blind, or sluggish in appreciation? In what he says there is a direct suggestion that it was the gas people—not their own experiences—who induced the 313 tenants to seek relief from the electrical fetters. "Hotspot" in the same issue heads a paragraph "Gas Attack on All-Electric Houses." Will "Hotspot" produce his evidence that he is right, and that we are wrong, as to the real cause of the revolt? The "Electrical Review" goes farther, and states that "'cooking,' in the figurative sense, has been done by the gas interests;" and further, "now the Gas Company is alleged to be fomenting unrest among the tenants." The South Metropolitan Gas Company will probably note that, and desire information as to who it is who makes the allegation. However, it is all very entertaining; still more so the omission to mention the statements of the tenants as to the actual costs they have to pay out of their wages for being compulsory patrons of the electricity undertaking.

The Agitators.

Alternative Cooking Methods.

There is another thing which is not mentioned by our electrical contemporaries, and which does not support the insinuation or charge that the gas interests are responsible for the agitation. It is that a number of the tenants—a report says 100 or thereabouts—have bought oil appliances to escape from the electrical bondage. But they want labour-saving convenience, with economy and efficiency. Hence their desire to have the choice of gas or electricity—a desire which is the right of every Britisher. The "Electrical Review" asserts that every house is provided with an efficient coal fire cooking range and boiler, as well as with a coal fire wash boiler, so that the use of the electric cooker is not compulsory. Does our contemporary mean by this that the Woolwich Borough Council have so little faith in electric cookers that they themselves provided, in addition, coal-heated ranges for cooking? It is an extraordinary position of things for this Council, dominated as it is by Labour-Socialists, to spend money on equipment with such prodigal hand. In some of the houses, therefore, there are now a coal-fire cooking range, an electric cooker, and an oil stove! Yet the people have asked for the privilege to have gas cookers. We suggest that the tenants had experience of gas operation before electrical; and that, with the experience of both, they urge they should have release from the condition in their agreement which debars them from gratifying their desire. The "Electrical Review," with its tongue in its cheek, makes the point that, when the tenants entered into occupation, they knew that the houses were fitted with electric lighting and cooking apparatus; they could then have exercised their freedom of choice. The tenants at the time knew nothing, save what they had been electrically told, regarding electrical culinary operations. They do now; and the experience is the cause of the whole trouble, and of the resolve to regain liberty of choice to which every householder in the country is entitled. The letter by Mr. G. W. Keats, the Borough Electrical Engineer, which appeared in the "Birmingham Post," has been published by the "Electrical Times;" but not until its issue of Sept. 23, while a comment on it appeared in the "Memoranda" for Sept. 8. Our contemporary has, after much pondering over it, accepted it with open mouth. We advise it to look beyond Mr. Keats to the facts as revealed by the petition and the action of the tenants after their experiences.

The Protest Meeting.

One other point. "Meteor" of the "Electrical Times" states that the protest meeting called by those who desire freedom from compulsory electrical operation was rendered abortive by being composed of residents on the estate who apparently were not in favour of having gas installed. "Meteor" has either not read the reports of the meeting made by independent journalists, or he is not averse to gross misrepresentation. Will he tell us why those who are satisfied with electrical operation should go to a meeting and kick up a row because other people are seeking freedom to have gas or electricity as they individually think proper? We were not previously aware that that was the sort of thing electrical partisans did; and we decline to believe it. But apparently "Meteor"—whose ability for cutting grotesque capers is almost as great as that of the now famous Mr. Cook—would

have people think it is so. From what we understand, the rowdies at the meeting were supporters of the socialistic section of the Borough Council, who are more concerned with opposition to private enterprise than with the relative merits of gas and electricity. Hooliganism in supporting municipal electricity caused the closing of the meeting. Why cannot "Meteor" say so, and be truthful?

For Public Consumption.

Shaw Desmond has been at it again in the "Sunday Pictorial." A short time ago he had an effusion on electricity in the same quarter which was, in effect, a declaration that all was wrong with electricity supply at home; that he knew how all our great electrical engineers could be put right; and that when the cure was applied, it would mean the domestic and industrial salvation of our country. There will then be no unemployment—no anything that we dislike, and we shall be happy ever after. We are almost persuaded that Mr. Desmond's interest in electricity is part of the great electrical campaign to which the country is to be treated during the next six months, for with that campaign and the Electricity Bill "Great Britain is about to enter upon a new phase as remarkable as the transition from hand power to steam"—in what way, is left to the imagination. In one place in his article, Mr. Desmond says he is "not forgetting the stock arguments against electricity;" another thing his article plainly shows is that he has been taught, and has not forgotten, the stock arguments for electricity, for to one who has moved and had his being among matters treating of light, heat, and power, it is known that much of what Mr. Desmond has pressed into his article has been in stock so long that many electrical men refuse to put it in the window for public consumption. He tells his readers that they have been "paying through the nose for electricity." Probably some of them have. It depends on the purposes for which they have used the energy.

Dusty Arguments from Stock.

Among the stock arguments against electricity of which Mr. Desmond has heard "is the claim that in the form of electricity the therm costs about 2s. 6d. as opposed to only 9½d. for the gas therm. But people sometimes forget that half the heat from gas is wasted up the flue." The "Sunday Pictorial" and its readers ought to ask Mr. Desmond for his proof of this, because nothing but that which is veracious should be served up for Sunday reading. Mr. Desmond having made a categorical declaration as to waste up the flue will permit us to make one just as positive—that he is wrong, with the additional assertion that we can prove he is, and that he cannot prove the contrary. We will not enlarge this note with a discussion on the relative thermal efficiencies of gas and electricity. We will only ask him to consider that, if half the heat of gas is wasted up the flue, it is a loss of 50 p.ct. of the heating energy for which he has paid 9½d. Half 9½d. is 4¾d., and together the figures make 1s. 2¼d. Does Mr. Desmond care to pay 2s. 6d. for an article which is not worth more than another which he can purchase for 1s. 2¼d.? Would he rather pay £100 at one shop for something he can get elsewhere at £50? Mr. Desmond may retort that he is not a fool. Briefly as to other points: There is no more saving in the all-electrical home than there is in the all-gas home—on the contrary, in the former there has to be a deeper dipping into the domestic exchequer. Gas heating, too, does not involve any more labour than electricity. Apparently it is not known to Mr. Desmond that the gas-engine is precisely like the electric motor—it only uses energy when operating, and its efficiency is greater. Nevertheless, for some purposes the electric motor is to be preferred to the gas-engine; for heavy load and group driving, it is not. Mr. Desmond, with his great faith in super-electric stations as a means of cheapening electricity in England, has a lot to learn regarding the counteractive costs of, and losses in, distribution. He has also to learn more of the small percentage part that power has in total works costs; and he has yet to find that manufacturers in the industrial areas of the country are convinced that the wide distribution of electricity from central stations to poor consuming districts is going to cause their power costs to increase rather than descend. A present good electrical area will not be better served by having to carry on its back miles and miles of electric cable to supply thinly populated areas a considerable distance away. Mr. Desmond has much to learn respecting the economics of electricity generation, distribution, and utilization before he can be a leader of men in large electrical matters.

Wiring the Homes Campaign.

The promoters of the campaign for "Wiring the Homes of Great Britain"—the Electrical Development Association and the Electric Lamp Manufacturers' Association—held an inaugural luncheon on Sept. 17; and the invitations to the daily and electrical Press were on a lavish scale. The information given during the speeches has, for most part, been already sufficiently covered in our columns to indicate what our trade rivals have in hand for the present six months. Into the organization of the scheme, there is no question a vast amount of work has been put; and advertising literature is going out in bulk form. At the time of the luncheon, it was computed that some 250,000 booklets dealing with the public competition have been issued, and upwards of 100 local electrical circles have been formed to attend to the regional details of the programme. One of our electrical contemporaries states that it will not be the fault of the organizers "if six months hence the mentality of the population of the United Kingdom has failed to undergo important change, conducing to a more rapid rate of domestic electrical development." The fervent hope is also expressed that nowhere in the industry will there be failure to rise to the occasion; and it is suggested that it will be deplorable if the would-be consumer is to be confronted with "obduracy" from any electrical quarter. According to Mr. Llewellyn B. Atkinson, 1000 British-made electric cookers are being put into service weekly. We have no knowledge whether this is right or wrong, but anyway the average per electricity undertaking is not great. The proceedings at the luncheon generally constituted an emphatic appeal to everyone present, and to all engaged in the electricity industry, to support the propaganda scheme to the utmost of their ability.

Troubles.

As pointed out on a previous occasion, it is particularly unfortunate that the campaign coincides with the coal stoppage, and the compulsory increase of charges for electricity in so many districts. It is also unkind that, in so many places throughout the country, there have lately been electrical troubles which have had publicity. Among those which we have come across is a fire at the Congregational Church, Wavertree, Liverpool, which occurred on the morning of Sept. 19, just before 8 a.m., and which caused damage to an extent which will necessitate considerable renovation. In the "Liverpool Post" it is said that "the source of the trouble was quickly located, and by 8.55 a.m., the fire, which was due to a fused electric wire, was under control." It was reported last week that damage, estimated at between £5000 and £6000, was occasioned by a fire at the premises of Messrs. Crossley Bros., Valley Road, Shipley. A newspaper account says that "the fusing of an electric wire is believed to have been the cause of the outbreak." In the "Manchester Guardian" on Sept. 21, it was stated that an unusual number of short circuits took place the previous week-end on the low-tension distribution mains of the Corporation; and there were explosions, which caused some alarm, resulting from the volatilization of the bitumen, and the ignition of the gas thus generated. "The Sussex News" on Sept. 20 reported that a young man named Shoesmith met with a serious accident at a garage in Chichester on the previous Saturday. It appears that he was engaged in doing some electrical fitting at the garage, and went down into the cellar to turn-off the main switch. A minute later there was a loud explosion; and he was hurled back through the trap door in flames, which necessitated his removal to the hospital. A report also reaches us that a girl named Mary Cook, an employee of the Anchor Thread Mills, Paisley, was electrocuted in the early part of last month. She was cleaning a machine, and received a shock. Artificial respiration was tried without success. Last Sunday week, during service at several places of worship in the Kimberworth area of Rotherham, the electric light failed, and the tram service was also interrupted. On Sept. 26, the electricity supply failed at Ilford while church services were in progress. In some cases the stand-by gas supply was brought into operation; but in those where gas was not available candles were obtained, in order that the preachers might proceed with their sermons. The whole of the tramway service was affected. Later the same evening, there was a second failure. The trouble was attributed to a switchboard defect at the electricity station.

The Bergius Process.—Discussing the various aspects of "Fluid Fuels," before the Institution of Fuel Economy Engineers, Dr. A. E. Dunstan (Chief Chemist to the Anglo-Persian Oil Company, Ltd.) remarked that, of all the methods that have been proposed for converting solid into liquid fuel, that of Bergius stands out as a monument of laboratory research and brilliant engineering practice; but after many years of intensive effort, the process has yet to justify itself commercially. Yet the fact remains that Bergius has pointed the way to a more complete liquefaction of coal substance than had hitherto been deemed practicable. The oil thus obtained might fairly be described as a primary tar, not so dissimilar from low-temperature tar as it is from petroleum. Consequently a new technique is required to handle this material; and it is more than likely that, were Bergius oil produced in large amounts, cracking would be the avenue of approach. Although the Bergius process has chiefly attracted public attention by virtue of its application to coal, it should not be forgotten that the same procedure may be applied much more readily to the treatment of heavy petroleum residues, which on reduction yield lighter oils. In fact, the process may be regarded as one of cracking and simultaneous hydrogenation.

"B.C.G.A." NEWCASTLE PROGRAMME.

The following is the official programme for the Fifteenth Annual General Meeting and Conference of the British Commercial Gas Association, which is to be held in Newcastle-upon-Tyne, on Monday, Tuesday, and Wednesday, Oct. 25, 26, and 27, under the Presidency of Mr. John E. Cowen, J.P., the Chairman of the Newcastle-upon-Tyne and Gateshead Gas Company.

ORDER OF PROCEEDINGS.

Monday, Oct. 25.

Reception and Lecture.

In the Old Assembly Rooms, Westgate Road.

8. 0 p.m. Reception by the Lord Mayor of Newcastle-upon-Tyne (Councillor Anthony Oates) and the Lady Mayoress.
8.30 p.m. Lecture by Dr. C. W. Saleeby, F.R.S. (Edin.), on "Sunlight and Health."
9.15 to 10.30 p.m. Light Refreshments. Music.

Tuesday, Oct. 26.

Morning.

Business Conference.

In the Old Assembly Rooms.

10. 0 a.m. Assembly of members.
10.15 a.m. Welcome by the Lord Mayor of Newcastle-upon-Tyne.
10.30 a.m. Presidential Address by Mr. John E. Cowen, J.P.
Announcement of Election of President and Auditors for the ensuing year.
Presentation of the Annual Report and Statement of Accounts by the Executive Chairman, Mr. F. W. Goodenough, C.B.E.
Paper by:
Mr. T. P. Ridley (Secretary and Commercial Manager, Newcastle-upon-Tyne and Gateshead Gas Company), on "Local Publicity."
Discussion.
12.45 p.m. Adjournment for luncheon.

Afternoon.

Official Visits.

Members will be welcome at, and are cordially invited to visit, any of the following:

1. CHIEF SHOWROOM—Distribution and Fittings Workshops (new process of cooker cleaning will be demonstrated)—Pipe Bending Furnaces at Swan, Hunter, and Wigham Richardson's Shipyard at Neptune Works, Walker—Ships Plate and Angle Furnace at Smith's Docks, North Shields. Meet at Showroom, 33, Grainger Street West, at 2 p.m. prompt.
Return to Newcastle about 5.45 p.m.
2. CHIEF OFFICES: Examination of clerical methods: ordinary and prepayment ledger work by Burrough's Adding Machines—Costing work by Hollerith Sorting and Adding Machines—Stock Registration and Dividend Work. Meet in Secretary's Office, 33, Grainger Street West, at 2.30 p.m.
3. GAS-WORKS: Elswick Station—Glover - West Vertical Retorts.
4. GAS-WORKS: Redheugh Station — Horizontal Retorts equipped with Drakes and De Brouwer Stoking Machinery.

Meet outside Old Assembly Rooms, at 2.30 p.m.

5. TAR WORKS: At St. Anthony's—Hird's continuous plant, with the Wikner steam dehydrating process—Tar Acid plant. Meet outside Old Assembly Rooms at 2.30 p.m.
6. WARDLEY COLLIERY: (If colliery working). Pneumatic Separation and Dry Cleaning of Coal. Meet outside Old Assembly Rooms at 2.30 p.m.

Evening.

7.15 for 7.30 p.m. Dinner, at the Old Assembly Rooms, by invitation of the Chairman (Mr. John E. Cowen, J.P.), and Directors of the Newcastle-upon-Tyne and Gateshead Gas Company to the President-Elect, Vice-Presidents, and members of the "B.C.G.A." and visitors.
Reception of guests by Chairman—7.15 p.m. Evening Dress. Decorations will be worn.

Wednesday, Oct. 27.

Business Conference.

In the Old Assembly Rooms.

10. 0 a.m. Assembly of members
10.15 a.m. Opening remarks by the President of the Conference.
Paper by:
Mr. H. H. Creasey (Manager, Special Service Section, Gas Sales Department, The Gas Light and Coke Company), on "The Commercial Value of a Census of Consumers' Premises and the Inspection and Maintenance of Appliances."
The paper will be followed by brief accounts, presented by Mr. J. W. McLusky and Mr. W. J. Sandeman, of the Inspection and Maintenance Schemes in operation in Glasgow and Croydon.
Discussion.
Report by the Executive Committee on the situation created by the action of some building authorities in omitting flues from living rooms.
Discussion.
12.45 p.m. Adjournment.
1.15 p.m. Luncheon at the Central Station Hotel by invitation of the President-Elect, the Vice-Presidents, and members of the Association to the President of the Association and the Directors of the Newcastle-upon-Tyne and Gateshead Gas Company.

CLOSE OF CONFERENCE.

COAL DISTRIBUTORS AND SMOKE ABATEMENT.

From the Coal Distributors' Information Department, we have received the following communication:

A number of leading coal distributors have formed an organization for mutual protection in respect of legislation introduced into Parliament which threatens the interests of the trade. This organization, which is styled the Coal Distributors' Parliamentary Committee, has its offices at 8 and 9, Essex Street, Strand, W.C. 2, and will take immediate steps with a view to counteracting the publicity campaign on behalf of gas and electric light interests which is usually referred to as the Smoke Abatement Movement. The object of this publicity is to induce Parliament to insert an amendment in the Public Health (Smoke Abatement) Bill, 1926, which, if carried, would have the effect of permitting public authorities to refuse permission for open grates to be built in new houses, the occupiers of which, in such event, would be forced to use gas or electricity for lighting and heating. It is believed that, when the public become aware of this attack upon liberty, considerable opposition will be manifested, and will be communicated to members of Parliament.

BITUMINOUS COAL CONFERENCE IN PITTSBURGH.

British Representatives.

A Conference on Bituminous Coal, to be held at the Carnegie Institute of Technology, in Pittsburgh, Penn., U.S.A., has been definitely scheduled for Nov. 15 to 19. As a result of a visit to Europe this summer by Dr. Thomas S. Baker, President of the Carnegie Institute, it is announced that several distinguished scientists and fuel technologists in Europe have accepted his invitation to attend the congress. German representatives will include Privy Councillor Prof. Franz Fischer, Director of the Institute for Coal Research at Mulheim-Ruhr, and Dr. Friedrich Bergius, of Heidelberg. England will be represented by Dr. C. H. Lander, Director of Fuel Research of the Department of Scientific and Industrial Research, Dr. R. Lessing, and Mr. Geoffrey M. Gill. France will be represented by General Georges Patart, who was in charge of the manufacture of explosives during the war, and who is the inventor of a process for making methyl alcohol from coal. In addition, there will be a representative from the Office National des Combustibles Liquides. Besides these, there will be a number of European specialists who have done work in the development of certain processes. American scientists, chemists, and fuel technologists who have been doing important research work in the chemistry of coal and other problems will have a large share in the programme. The purpose of the meeting, according to President Baker, is to bring together the men of all countries who have done notable work in the study of more scientific and rational utilization of soft coal. Listed for discussion are such questions as the manufacture of substitutes for gasoline from coal; the complete gasification of coal; high temperature and low temperature carbonization; bye-products; smokeless fuel; pulverized coal; hydro-electric power *versus* steam power, &c.

Midland Junior Gas Association.—On Thursday, Oct. 21, there will be a meeting of the Association at Birmingham, when Mr. C. F. Tooby, of the Foleshill Gas-Works, Coventry, will give his Presidential Address.

Manchester District Junior Gas Association.—On Saturday, Oct. 9, the Association will visit the Bury Gas-Works. Following tea at the invitation of the Bury Gas Committee, Mr. W. H. Battersby will deliver his Presidential Address.

North of England Gas Managers' Association.—The autumn meeting of the Association will be held at Hexham on Friday next, Oct. 8. In addition to the Presidential Address of Mr. Herbert Lees, there will be a visit to the Hexham Gas-Works.

Education and Commerce.—A high standard of education is nowadays expected of boys and girls applying for junior positions in big commercial firms. A recent inquiry as to the opinions of some of the larger business houses shows that the London Matriculation Certificate is an essential qualification, or that those who hold it are given preference, other things being equal, over those who do not. For instance, the Gas Light and Coke Company say: "In considering candidates for clerkships, the Company give preference, other things being equal, to those who have passed recognized public examinations of the nature of the London University Matriculation Examination or other examinations exempting therefrom. For a limited number of posts such a qualification is a condition of employment." The foregoing, and similar letters from 47 other large industrial and commercial houses, are published in "The Master Key," a pamphlet just issued by Wolsey Hall, Oxford. The recent experience of a Newcastle firm forms an interesting sidelight on the necessity for such a standard of education. Advertising 30 vacancies for apprentices, they received no fewer than 3000 applications!

MEMORANDUM PREPARED BY THE NATIONAL GAS COUNCIL OF GREAT BRITAIN AND IRELAND,

EXPLAINING THE NECESSITY FOR AMENDING THE PRESENT GAS LEGISLATION.

[Reprinted, by Permission, from the August Report.]

It is a remarkable fact—not generally appreciated—that the principal legislation under which the gas industry operates to-day dates back to the years 1847, 1859, and 1871. Although the legislation of that time may have been admirably adapted to the conditions then obtaining, it is not only inadequate, but in most respects quite unsuited to the present needs of the industry. The gas industry in this country came into existence about the year 1812. At that time, and for many years afterwards, gas was regarded solely as a means of providing illumination, and was for all practical purposes without a competitor in that field.

Owing to the fact that gas companies had no right to break up streets and highways for the purpose of laying their mains, it was incumbent upon them to have recourse to Parliament, which took the view that it was necessary to restrict each company to a definite area of supply and, in effect, granted each such company a virtual monopoly of lighting within such area. At the same time, the divisible profits of a gas undertaking were restricted, and the amount which might be placed to reserve was strictly limited. It was this grant of a quasi-monopoly, and the absence of any competing illuminant, that provided some justification for the control of gas undertakings in those days.

In the year 1847, the Gas-Works Clauses Act was introduced, which incorporated such clauses as had been commonly approved by Parliament in private legislation dealing with the subject of gas. A further Clauses Act was passed in 1871, which, in effect, placed an obligation upon all statutory undertakings to give a supply of gas to premises situated within a certain distance from their mains.

It was through the medium of Private Bills that the revolutionary change in the control of gas undertakings was instituted by the establishment of the sliding-scale system, whereby the charges which each company might make for gas, and the dividends which it might pay, were governed. This system—so generally adopted to-day—was introduced about the year 1875, for the purpose of providing an incentive to the undertaking to reduce its charges for gas. The tendency in legislation, generally speaking, has been to place further restrictions and obligations upon gas undertakings, instead of according them the greater freedom which changing circumstances require.

As a result of this legislation, statutory regulation and restraint have been extended to all those essential questions which are regarded in commercial undertakings as being matters of domestic policy—such as the amount of permissible capital and the methods of raising it; the quantum of the dividends to be distributed, the prices to be charged, and the method of charge; formation of reserve funds; and the amount of residuals other than those of their own production that may be worked up by a particular undertaking.

Too much stress cannot be laid on the fact that to-day the gas industry, although it is one of the basic industries in the country, cannot, by reason of existing legislation, be run on ordinary commercial lines. The old-fashioned belief that gas is a monopoly still lingers. This is not the fact. The gas industry is in the severest competition, not only with electricity (an industry which is subject to a much less stringent form of control), but also with unfettered private enterprise—*i.e.*, coal, oil, and residual products common, not only to the gas industry, but to other industries, such as coke, tar, pitch, creosote, and ammonia. The industry is faced with competition, not only in this country—in the distribution of light, heat, and power—but in the markets of the world, in the disposal of its residual products.

During the last quarter of a century, and more particularly since the outbreak of war, radical changes have occurred, both in regard to the purposes for which gas is used and the conditions under which the industry has to conduct its business. Gas is no longer mainly an illuminant; it is now in greater demand as a fuel, not only for heating and cooking in domestic premises, but also for heating in industrial processes. There are over 3000 distinct trades in which gas is used for industrial processes, actually for an average of no fewer than seven processes in each. In industrial centres between 30 p.ct. and 40 p.ct. of the gas supplied is used for industrial purposes. In Sheffield more than 50 p.ct. is used for such purposes. Moreover, the cramped view of the Legislature in the past in regarding the gas industry as consisting of a large number of independent, self-contained units catering for a single need of a limited community, rather than regarding it as a national industry performing national services of the greatest value, has been found to be demonstrably untenable to-day. Progress in the science and technique of gas manufacture and supply has made it, not only possible, but in many cases an economic proposition for an undertaking to extend its area of supply far beyond the confines originally contemplated by Parliament. The gas industry must to-day be regarded as a coherent whole, rather than as an aggregation of scattered and unconnected undertakings.

The gas industry is entitled to take great credit to itself for having successfully surmounted the difficulties with which it has had to contend owing to the hampering and out-of-date regulations to which it has had to submit. The time, however, has now come when steps should be taken to effect a large measure of statutory reform, and to consolidate and amend the existing legislation. The National Gas Council, however, recognize that a complete overhaul and amendment of the existing general gas legislation might be a task involving some delay; and though it is of great importance that this should be undertaken at the earliest opportunity, the circumstances of the gas industry are such that the Council feel themselves under the necessity to press that some of the more urgent matters to which attention is hereafter called should be dealt with, without waiting for the more comprehensive measure which is required to place the regulation and control of the gas industry upon a sound and businesslike footing. This Memorandum is therefore drafted, not only for the purpose of indicating the general lines upon which comprehensive legislation should be introduced in the future, but, in particular, of pointing out those special matters which urgently need attention, and in connection with which immediate statutory redress is required.

The National Gas Council urge that, subject always to the interests of consumers being adequately safeguarded by the Board of Trade, the widest facilities should be accorded to the gas industry to develop and progress free from State interference. The proposals that are made fall under four main headings, namely:

(1) Those dealing with financial matters.
(2) Those facilitating co-operation and joint working.
(3) Miscellaneous proposals.
(4) Proposals relating solely to Scottish undertakings.

I.—Proposals Dealing with Financial Matters.

The efficiency, progress, and development of the gas industry are largely dependent upon the ability of undertakers to raise capital cheaply. This could at one time be done without difficulty, but recently, owing to a variety of causes, not the least of which is the extensive advertisement and publicity which has been afforded to electricity in connection with the Government's proposals, it has become increasingly difficult to do so, and there is no doubt that, unless there is an extensive amendment of the existing legislation in the direction of removing financial disabilities and granting increased financial powers, the gas industry will not only be unable to compete on equal terms with the electricity industry, which will receive the benefit of a State guarantee, but will find it difficult to maintain the degree of efficiency to which it has now admittedly attained.

The financial difficulties which at present beset the industry are attributable in the majority of cases to certain defects in the operation of the sliding-scale, and a clear understanding of the present position can only be obtained by a short survey of the history and operation of the sliding-scale. The object of the sliding-scale of price and dividends was to secure a progressive reduction in the price of gas by providing an incentive to good management and a deterrent to bad management on the part of the companies to whom it was applied. The standard prices originally fixed as the pivot upon which the sliding-scale would operate in each case were regarded as parliamentary bargains of a permanent character; and the proceedings before Private Bill Committees show conclusively that until the war that view was generally accepted. On the faith of the stability of the bargain, many millions of capital have been invested in the industry.

The results of the sliding-scale were of undoubted benefit to the original shareholders, as well as to the consumers, not only directly by the reduction of prices and the consequential increase of dividends, but indirectly by encouraging the ready influx of new capital into the industry. By virtue of the auction clause, new capital has to be raised in the open market at the highest prices obtainable; and existing stockholders have no preference. When, therefore, larger dividends become payable under the sliding-scale, the new capital constantly required can be issued on correspondingly better terms. As the provision of cheap capital for remunerative extension of business is a vital factor in cheapening the supply of any commodity, there can be no question that the increase of dividends under the sliding-scale has (by adding to the attractiveness of the capital offered, and thus improving the price of issue) contributed in a marked degree towards the reduction in the price of gas which has been brought about since the sliding-scale was introduced fifty years ago. In that period the sale of gas has increased between four and five fold, and the capital needed for the purpose has been readily obtained.

Financial conditions arising out of the war put the sliding-scale out of action; the confidence of investors was destroyed, and the Temporary Increase of Charges Act, 1918, did nothing to restore that confidence. The Act of 1920, though it has partly succeeded in bringing the sliding-scale once more into operation, has at the same time very seriously affected the stability which is essential to its efficient working. This, coupled with the political propaganda on behalf of electricity, makes it impossible at the present time to raise new

capital except on terms which cannot fail to prejudice the constant endeavour of the suppliers of gas to reduce its price.

Any additions to, or reconstructions of, plant, and any extension of operations, under present conditions require a much greater expenditure of capital than in the past to provide plant and mains of equivalent capacity. New housing schemes, for example, are not infrequently well outside existing systems of distributing mains; and the houses themselves are generally wider apart, and therefore cannot be supplied so cheaply as existing areas. If the necessary capital can only be raised at a heavy discount, it is clear that extensions can only be carried out under grave disabilities, and, in many cases, must be indefinitely postponed.

The demand for gas is daily increasing; and the industry are keenly alive to the necessity of fulfilling their obligations as public utility undertakers. But to enable them to do this with fairness to those who have already invested in the industry, and to their existing consumers, it seems to them essential that such changes shall be made in the regulations as to price and dividend, that in the case of a normally well-conducted undertaking it should be possible to raise capital at least at its nominal value. The restoration of stability to the sliding-scale is of first importance; and it is useless to expect that the confidence of the investing public will be revived until this is done. Likewise it is necessary to encourage a ready flow of capital into maximum price and dividend undertakings.

A step in this direction would be taken if it were made clear that an Order under section 1 of the Gas Regulation Act would not in any event take away from the undertakers any benefit which would accrue to them under the normal operation of the sliding-scale, either by reason of more economical working or of increase of business—benefits which would have accrued to the advantage of the undertakers prior to the war, and would make provision for the increased cost of providing plant and mains.

Experience shows that the Gas Regulation Act has, in the case of sliding-scale companies, failed to achieve one of its primary purposes—namely, to place such companies in the position which they occupied prior to the war. Under section 1 of the Act, the Board of Trade increase the standard price by an amount representing the difference per 1000 c.ft. or per therm between the cost of manufacturing and supplying gas before and since the war. This additional sum fails to take into account:

1. Increased sales of gas.
2. Increased cost of obtaining share capital.
3. Increased cost of plant and other capital works.

With regard to 1, the method employed for increasing the standard price is only equitable where there has been no increase in the sales of gas. In the case of nearly every company, energetic salesmanship has produced greatly increased sales of gas; but the working costs have naturally not increased *pro rata*. The result is that the increase in costs when expressed in pence per 1000 c.ft. or per therm of gas sold is lower than it would have been had the gas sales remained stationary. Thus, the successful company which has extended its business receives a smaller increase in the standard price than the company which has not been so successful.

This may be better understood by taking the simple case of two similar companies who before the war had the same standard price, sold the same quantity of gas, and whose manufacturing costs were the same, (say) 1s. 6d. per 1000 c.ft. The company whose business had remained constant finds its costs per 1000 c.ft. increased to 3s. (*i.e.*, by 100 p.ct.). The difference—viz., 1s. 6d.—is added to the standard price. The other company having increased its sales finds that, although its costs have also increased by 100 p.ct., its costs per 1000 c.ft. of gas sold have increased to only 2s. 6d. The permissible increase in the standard price is therefore only 1s., which is 6d. less than that obtained by the less successful company. It can be proved that, were wages and materials to fall to the pre-war level of prices, the standard price calculated under the Gas Regulation Act would be, in some cases, actually lower than the pre-war standard price.

With regard to 2, owing to the depreciated value of money, stock which before the war could be raised at par can now be raised only at a discount of 15 p.ct. to 30 p.ct. In other words, about £120 of capital has to be issued to-day in order to obtain £100 cash. It will be seen, however, that the standard price is increased only by the difference in the working costs, and no provision is made to enable the company to earn sufficient money to pay the same dividend as before the war. For example, if a dividend of 5 p.ct. was paid before the war on stock raised at par, and represented 6d. per 1000 c.ft. of gas sold, the company would to-day have to earn 6d. + 20 p.ct. = 7·2d. per 1000 c.ft. to pay 5 p.ct. on the capital issued at the discount mentioned.

With regard to 3, the cost of plant and machinery is now nearly double what it was before the war, so that where (say) £10,000 would have been sufficient to meet capital requirements before the war, £20,000 is now necessary in order to cope with an equal extension of business. This fact intensifies the difficulty referred to in No. 2, because the company is faced with the necessity, not only of earning a larger amount per 1000 c.ft. to pay the pre-war dividend, as already pointed out, but has a greatly increased amount of capital on which to pay this dividend.

The mere rehabilitation of the sliding-scale could not, however, be expected to allay the uncertainty of the present situation; and the National Gas Council have been forced to the conclusion that a minimum dividend should be provided for in the case of sliding-scale companies, so that, if earnings permit, a reasonable return on investments may be payable, with a possibility of increase in such payments as the price of gas falls. It should be borne in mind that, where the sliding-scale has been introduced in the case of electricity undertakings, it is usually accompanied by a provision of this nature; and it may also be noted that under the Railways Act, 1921, the Rates Tribunal, in determining the charges which may be made by the railway companies, must make provision for a reasonable return on capital being earned. Parliament has recently inserted in numerous Private Acts relating to water undertakings provisions of such a character.

Again, undertakings should be permitted, when making a new issue, to offer shares or stock, under conditions defined by the Board of Trade, to their consumers, stockholders, and employees before the same are offered for sale by public auction or tender. For this purpose the usual form of the auction clause would have to be amended. In America emphasis is laid upon the importance of associating consumers and employees in the prosperity of the undertaking; and it is felt that great advantage would accrue to undertakings if the practice followed in America, and already authorized in the case of some undertakings in this country, could be widely adopted.

In conjunction with the provisions for a minimum dividend, and a rectification of the defects in the operation of the sliding-scale, provision ought also to be made for the raising of capital more easily than is at present possible. To-day, gas undertakings are compelled to have recourse to cumbrous and costly procedure for the purpose of obtaining authority to raise capital. On the other hand, the vast majority of electricity supply companies have been created under the Joint Stock Company Acts, and can, unlike gas companies similarly created, raise capital without parliamentary sanction. If a gas undertaking needs to raise further capital to-day, it is compelled either to promote a Private Bill in Parliament or to adopt the Special Order procedure laid down by section 10 of the Gas Regulation Act, involving the giving of notices in the "London Gazette" and public Press, and often the holding of a public inquiry by the Board of Trade. The draft Special Order may be blocked in the House of Commons and sent to a Select Committee; and in the House of Lords it is, in any event, remitted to the Special Orders Committee, who may order a further inquiry by another Committee of the House of Lords. Even in the case of an unopposed Special Order, great delay is experienced and considerable and heavy expenses incurred; and in the case of an opposed Order the cost for small undertakings becomes almost prohibitive. For instance, the cost to the promoters of the Great Yarmouth Order, 1925, of the parliamentary opposition alone (the circumstances of which will be in the recollection of the Board of Trade) was, the National Gas Council are informed, nearly £400.

It is submitted, therefore, that gas undertakings should be able to raise capital with the sanction of the Board of Trade and without recourse to Parliament. Municipalities and local authorities should be similarly enabled to borrow money for gas-works purposes, with the consent of the Board of Trade, given after consultation with the Ministry of Health. This proposal is in conformity with the trend of modern legislation. For very many years municipal water undertakings have been enabled to obtain authority to raise capital from the Ministry of Health alone, without the obligation of having recourse to Parliament for this purpose.

In the case of municipal gas undertakings, Parliament has approved the practice of inserting a clause in Special Orders to the effect that the undertaking may borrow at interest, with the sanction of the Ministry of Health, such sums as may in the future be necessary for the purposes of the undertaking, including the provision of working capital in connection with that undertaking. This facility *per se* may not, however, be sufficient to enable capital urgently required to be raised in the most economical manner; and general authority should be given to gas undertakings to increase their borrowing powers so as to enable them, with the consent of the Board of Trade, to raise capital by loan up to the full amount of the paid-up capital. Similar facilities are enjoyed by many electric supply undertakings—*e.g.*, the Chelsea Electric Supply Company, Notting Hill Electric Lighting Company, and the South Metropolitan Electric Lighting Company. No valid objection can, it is submitted, be taken to this proposal, seeing that the ordinary stockholders would not sanction the adoption of this method of finance if any other were feasible. It often occurs, as is the case to-day, that circumstances prevent an undertaking from raising capital at economic rates by the issue of ordinary or preference shares. In such cases resort must be had to borrowing powers, which to-day are limited, and which in many cases are exhausted.

Another reform which is urgently required is the introduction of greater elasticity in the method of charging for gas. Undertakings working under the sliding-scale are not in a position to adopt a policy of encouraging increased consumption of gas by the adoption of a two or three part tariff—a system of charging recognized by the electricity supply industry in this country, and by both the gas and the electricity industries in the United States, as being in the best interest alike of the undertaking and the consumer. Freedom should be given to undertakings to adopt this policy; and, where so adopted, power should be accorded to the Board of Trade to make the necessary consequential modifications in the sliding-scale.

At the present time the almost universal practice in this country is to charge a flat rate per therm or 1000 c.ft. consumed. The overhead costs which the undertaking incurs are spread evenly over each therm or 1000 c.ft. supplied, whereas a large portion of such costs are, in fact, due to the services performed in maintaining plant and equipment in a condition of readiness to supply, and are not, therefore, proportional to the quantity of gas actually consumed by a particular consumer. For example, the cost of maintaining and repairing mains and service pipes and reading meters continues regardless of the quantity of gas consumed by any individual consumer.

It is obviously unfair that a person who uses gas occasionally should pay only the same amount per 1000 c.ft. or per therm as a person who uses gas for all purposes, as this means that a large proportion of the capital and overhead costs involved in maintaining the undertaking in a position to meet possible demands for gas are borne by gas undertakings' best consumers, thereby unfairly relieving those whose claims for consideration are weakest. The two

or three part tariffs have been evolved for the purpose of redressing this unequal treatment.

The two-part tariff is a name given to a system of charging whereby a fixed charge is made to cover those standing charges which have to be incurred whether a person to whose premises gas is supplied uses a little or a very large quantity of gas, or, indeed, no gas at all, and a further charge varying directly in the case of each consumer with the actual quantity of gas consumed. This is the system to-day in vogue in our national telephone system; and it is in general use by electricity undertakings.

A refinement of this system is the so-called three-part tariff, which, while incorporating the main principles of the two-part tariff, gives an additional benefit to the consumer who agrees to take his supply of gas in pre-arranged maximum quantities at stated periods other than the period of peak load, and by so doing enables the undertaking to make more efficient use of its existing plant. This system in its operation has its counterpart in the reduced tariff applicable to telephone calls made outside the rush hours.

The adoption of the two or three part tariff has the additional merit of constituting a method of sale which is highly popular with consumers. In the United States of America it is reckoned that the introduction of a scientific method of charging has been one of the main reasons for the great success of the American gas industry, in the face of the fiercest competition.

The foregoing proposals in connection with the financial matters may be summarized as follows:

(1) *Authority to raise capital.*

Power to raise capital without the sanction of Parliament; the consent of the Board of Trade alone to be necessary.

(2) *Power of and facilities for obtaining capital expeditiously and at cheap rates.*

(i) Introduction of a minimum dividend in the case of sliding-scale companies.

(ii) Amendment of section 1 of the Gas Regulation Act, 1920, with a view to the establishment of such standard prices and dividends as will give a reasonable return upon capital.

(iii) Maximum price and dividend companies to be afforded the option of adopting the sliding-scale as amended and the minimum dividend.

(iv) Undertakings to be able to offer shares or stock to consumers, stockholders, or employees upon terms defined by the Board of Trade.

(v) The borrowing powers of undertakings to be made equal to the full amount of the paid-up capital.

(vi) Statutory companies to be empowered to create and issue in lieu of ordinary stock already authorized redeemable or irredeemable preference stock.

(vii) Undertakings to be empowered to redeem obsolete capital out of revenue, subject to the sanction of the Board of Trade.

(viii) The Board of Trade to be empowered to sanction modifications in the methods of charging for gas.

II.—Proposals for Facilitating Co-operation and Joint Working.

Economic circumstances have rendered it imperative that every facility should be given for gas undertakings to amalgamate, co-operate, or undertake joint working with other undertakings, other purchasers and suppliers of gas, and with ancillary industries.

The needs of the community can no longer be met by treating the problem of gas supply on parochial lines.

This truth has already been recognized by the electricity supply industry, and is confirmed by the report of the Coal Commission, which expressly states as follows:

> The point of importance is that no obstacles, whether of State regulation or industrial organization, should be placed in the way of the development (of fuel industries) . . . in whatever manner engineering and chemical skill and the economic conditions may indicate is the most suitable.

At present not only is the procedure by which amalgamations can be authorized unnecessarily slow and costly, but the powers which can be granted under a Special Order are limited.

It is proposed, therefore, that the Special Order procedure under section 10 of the Gas Regulation Act, 1920, should be replaced by Departmental Orders issued by the Board of Trade.

It is submitted that the confirmation of the Board of Trade alone is necessary for such schemes. In support of this contention may be cited the fact that the Mining Industry Bill proposes that the amalgamations of mines should be controlled by the Railway and Canal Commission, and that the Electricity (Supply) Bill now before Parliament specifically establishes a body outside Parliament to make the necessary arrangements for the linking-up of undertakings. Thus no valid objection can be taken to the suggestion that the Board of Trade—possessing, as it does, the widest experience in gas administration—should be the arbiters as to the reasonableness of any particular scheme of amalgamation or joint working among gas undertakings.

Moreover, the procedure here suggested is closely analogous to that contained in the City of London Gas Act, 1868, under which the Gas Light and Coke Company and two other companies supplying gas in the City of London were amalgamated. The machinery provided by that Act was the submission of the scheme to the Board of Trade for approval and its subsequent confirmation by Order in Council. This machinery was afterwards by various Special Acts extended to other companies; and various amalgamations were effected by this means.

The powers necessary to facilitate joint working embrace the following:

(1) Powers for the voluntary establishment of joint boards or joint committees either between local authority undertakings, company undertakings, or local authority and company undertakings, in conjunction with any company, body, or person willing to afford or take a supply of gas.

The purpose of these joint committees would be to enable a central body to link-up undertakings by means of high-pressure mains, to receive contributions from those concerned with the supply or purchase of gas, and to expend the same on works of all kinds for their mutual benefit, including the establishment of central gas stations. For these purposes, power should be given to undertakings to contribute to such joint boards or committees. Under present conditions (save in the case of a supply of gas in bulk where the statutory areas are contiguous), co-operation between municipally-owned gas undertakings and company-owned undertakings is impracticable; as also, indeed, is co-operation between any gas undertaking and anyone supplying gas without statutory powers. These joint boards would, it is thought, operate in a manner not dissimilar to that adopted by joint electricity authorities.

(2) Power to undertakings, including any company, body, or person willing to afford or take a supply of gas, to contribute capital to a separate company formed for the express purpose of laying and operating inter-connecting high-pressure mains, or, alternatively, to pay rent or toll for the user of such mains.

This proposal contemplates the formation of a separate, independent company, created for the purpose of laying and operating a trunk main serving a large area, and interconnecting numerous suppliers of gas, both statutory and non-statutory. This overcomes the difficulties, usually insuperable, which are encountered by undertakings that are desirous of instituting a scheme of joint working. The proposal would solve the three main difficulties—viz.:

(1) Who should undertake the work of laying the mains.
(2) Who should bear the initial outlay and cost of maintenance.
(3) How to cope with future extensions.

This scheme is in successful operation in the United States of America, where it has been found to lead to efficient and economical working.

It is proposed that the capital should be raised entirely by contributions from gas concerns interested in the supply of gas to or from such mains, and that the same should not be issued to the public. If municipal undertakings experience difficulty in subscribing capital, they would still be enabled to contribute such a sum by way of rent or toll as would cover their share of the cost incurred in the construction and operation of the trunk main.

(3) Power should be given to undertakings, municipal or otherwise, and, in the latter case, whether statutory or non-statutory, to become members of and contribute to large territorial Gas Associations; for instance, in the County of Suffolk, there might be a "County of Suffolk Gas Association" to which all the medium and small-sized undertakings might voluntarily belong.

This proposal is framed to meet those cases in which it is not possible, from an economic point of view, either to amalgamate or to link-up, but where none the less close co-operation, wherever and whenever possible, is most desirable. The advantages of the proposal would be that such a group would enable a highly-qualified managing director and engineer to be appointed, under the direction of an able chairman and board of directors. By purchasing coal supplies in bulk, linking-up undertakings (where feasible), decreasing overhead charges—*e.g.*, directors' fees, rent of offices, &c.—it should be possible to reach a far greater degree of efficiency than can at present be attained.

As the law stands to-day, it would be impossible to give effect to a proposal of this character. Municipal undertakings could not, without legislative authority, delegate any of their powers, nor subscribe, to an association of the kind proposed; and the former disability applies also to company undertakings.

(4) Power should be given to gas undertakings to hold shares in, or lend money to, other gas undertakings.

Such a power would be invaluable as a preliminary step to amalgamation; and in cases where amalgamation is not feasible, financial assistance may be very necessary to enable an undertaking to execute the preliminary work required before a supply in bulk can be given or taken.

(5) Power should be given to undertakings to supply or purchase gas in bulk, but not so as to relieve undertakings of their statutory obligations towards consumers in their own area.

(6) Power should be given to undertakings to co-operate with other undertakings in connection with certain subsidiary matters, which are set out later, including joint research work and the establishment of joint laboratories.

(7) Power should be given to undertakings to co-operate with, and lend money to and hold shares in, allied industries.

The advisability in suitable circumstances of combination or joint co-operation between allied industries has been recognized by the Royal Coal Commission. The gas industry desires to be in a position to take advantage of suitable opportunities, when they arise, of effecting such a co-operation. The gas industry visualizes the possibility of a group of undertakings in a district owning its own colliery, operating its own coke-oven plant, and working-up its bye-products in its own distillery, and providing transport by sea and land for coal and other materials. There are colliery companies and coke-oven companies which are to-day willing to put down coke ovens and give supplies of gas to gas undertakings, if such undertakings could, and would, provide part of the capital. This would prove of material advantage to such gas undertakings, as enabling them to purchase gas at a lower price than that at which the undertaking could manufacture it.

Again, if an undertaking could hold shares in a colliery company, it could be arranged that such undertakings would have a priority call on the supply of that coal which was most suitable for its par-

ticular gas manufacturing plant. Moreover, if low-temperature carbonization became a commercial proposition, it is probable that several gas undertakings would desire to form, and provide the capital of, a separate low-temperature carbonization company. Powers, therefore, should be granted to gas undertakings to hold shares in, or lend money to, allied undertakings.

Full advantage of this principle is taken in America, but at present the gas industry here is not in a position to do so. This proposal would in no way affect the sliding-scale principle. Gas undertakings would not enter into such arrangements as are outlined above unless the same were clearly profitable to them. Any business which would accrue from such arrangements would enable the gas undertaking to sell its gas at a reduced price, in a similar manner as if the increased revenue had resulted from an improved market for residuals.

Power to lay Pipes outside the Area of a Statutory Undertaking.

The permission of the Board of Trade should alone be necessary to break-up highways. Recourse to Parliament is unnecessary, delaying, and expensive. Wayleaves over private property should be granted by the Board of Trade in a similar manner to those granted by the Electricity Commissioners under the Electricity (Supply) Acts. At present a number of gas undertakings possess the power to give or to take a supply of gas in bulk. They are not, however, expressly authorized to break-up roads outside their existing statutory limits for this purpose.

Inasmuch as the source of a bulk supply is often outside the statutory area of the undertaking, it is not possible to give full effect to the power which it was no doubt the intention to confer upon gas undertakings; and with a view to facilitating the future linking-up of one gas-works with others, it is essential that powers should be conferred upon gas undertakings to break-up highways outside their statutory areas, but otherwise in accordance with the provisions of the Gas-Works Clauses Acts, for the purpose of laying interconnecting mains.

The foregoing proposals in connection with matters relating to co-operation and joint working may be summarized as follows:

(i) The Board of Trade to be empowered to sanction the establishment of joint boards or joint committees.

(ii) Undertakings to be empowered to contribute capital to a pipe-laying company, or to pay rent or toll for the user of pipes owned by such companies.

(iii) Undertakings to be empowered to become members of, and contribute to, large territorial gas associations.

(iv) Undertakings to be empowered to hold shares in, or lend money to, other gas undertakings.

(v) Undertakings to be granted greater facilities for supplying or purchasing gas in bulk.

(vi) Power to make use, jointly with other undertakings, of any premises, plant, organization, or other facilities relating to the manufacture and sale of gas or products.

(vii) Power to undertakings in regard to the joint purchase, transport, landing, and delivery of coal and residual products.

(viii) Power to prosecute joint research work in connection with coal and residual products, including the establishment and maintenance of joint laboratories.

(ix) Power to provide monies for carrying into effect any agreement in regard to the powers set out in (vi), (vii), and (viii).

(x) Joint working and co-operation with allied industries, including the right of the gas undertakings to hold shares in, or lend money to, such allied industries.

(xi) Power to lay pipes outside the statutory area of an undertaking.

III.—Miscellaneous Proposals.

Under this heading are grouped various proposals, the incorporation of which in a Bill amending existing gas legislation is deemed by the National Gas Council to be of importance.

(1) *The repeal of the Sale of Gas Acts, 1859 and 1860, and a new provision substituted therefor whereby local authorities can establish gas meter testing stations.*

(2) *The removal of the present limitation as to the kind and quantity of residuals that may be purchased by a gas undertaking.*

Unless the limitation as to quantity is abolished, cases will arise in which gas undertakings owning bye-product works will be compelled to decline to take a supply, or an increased supply, of coke oven gas in substitution for gas manufactured at their own works. The less gas made, the less residuals are produced. The consequence is that the bye-product works may become an uneconomic proposition unless the undertaking can purchase from outside sources further quantities of residuals of the same kind.

(3) *The incorporation in a new Gas-Works Clauses Act of numerous powers which can only be secured to-day by making special application to Parliament.*

Many of these powers amending or adding to earlier legislation are now embodied as a matter of course as common form clauses in all gas Bills and Special Orders, the effect being to cumber the Statute Book with repetition of lengthy provisions which should now form part of the general law.

The following list—which is not intended to be exhaustive—constitutes some examples:

(i) Right to refuse a supply of gas to persons in debt for other premises.

(ii) Extension of the powers given to local authorities to sell or hire gas fittings, so as (*inter alia*) to include gas stoves and boilers; and also gas engines and furnaces for industrial purposes.

(iii) Provision as regards construction and placing of pipes (*e.g.*, specification as to size, &c.).

(iv) Amendment of provisions as to cutting-off supplies and reconnecting and discontinuing a supply.

(v) Power to lay pipes for ancillary purposes, such as procuring, conducting, or disposing of oil or other material used or resulting from the manufacture of gas or any residual product.

(vi) Provision of valve where high-pressure air is used.

(vii) Anti-fluctuator to be used for gas engines.

(viii) Provision as to period of error in defective meter.

(ix) Power to be granted to local authorities to take licences for the use of patents.

(x) Power to purchase, take on lease, and fit-up showrooms.

(xi.) Power to provide houses for gas employees.

(xii.) Power to provide and subscribe to co-partnership, superannuation, and pension schemes.

(xiii.) Power to subscribe to trade or other associations, and in particular those connected with the gas industry.

(xiv.) Power to purchase lands compulsorily for gas-works purposes (see Electric Lighting Act, 1909, section 1).

(xv.) Power to break-up streets not reparable by the local authority (see Electric Lighting Act, 1882, section 13; Electric Lighting (Clauses) Act, 1899, sections 12, 15, and 21 (3)).

(xvi.) Fittings (including hire-purchase fittings) not to become property of freeholder though fixed to the premises (see Electric Lighting Act, 1909, section 16).

(xvii.) Exemption from liability to injunctions in respect of authorized gas lands (see Electricity (Supply) Act, 1919, section 10).

(4) *Introduction of an inexpensive and simple procedure whereby Non-Statutory Gas Companies can become Statutory.*

There are a large number of companies, mostly small in size, which are non-statutory, and which, owing to the cost involved, are not in a position to acquire the status of statutory undertakings. It is therefore proposed that the Board of Trade should be authorized to grant by means of an Administrative Order statutory powers to any non-statutory company applying therefor, which by resolution had adopted the Gas Regulation Act. The Order would be similar in form to those Orders which the Board of Trade is empowered to issue under section 1 of the Act referred to, but would incorporate the provisions of the Gas-Works Clauses Act.

(5) *Power to obtain "Fringe Orders."*

Under section 6 of the Electric Lighting Act, 1909, the Electricity Commissioners are empowered under certain conditions to grant to undertakers powers to extend the supply of electricity to premises outside their statutory area of supply. This power has been freely exercised with satisfactory results; and it is submitted that the Board of Trade should be authorized to grant similar powers to gas undertakings.

(6) *Payment of Capital Duty in the case of amalgamations.*

It is proposed that no capital duty should be payable when an amalgamation takes place. It must be borne in mind that duty has already been paid on the capital of the companies which have amalgamated; and the effect of re-imposing the duty upon amalgamation would be to double the amount of capital duty payable. In this connection it may be pointed out that under sub-section (4) of section 7 of the Railways Act, 1921, it is expressly provided that "no Stamp Duty shall be payable in respect of any amalgamation or absorption scheme." The Mining Industry Bill of this session contains a similar provision. Gas and railway undertakings are both public utility undertakings, and there is, it is submitted, no justification for differentiating between them in this matter.

The above miscellaneous proposals may be summarized as follows:

(1) Repeal of Sale of Gas Acts, 1859 and 1860, and grant of facilities to local authorities to set up meter testing stations.
(2) Abolition of limitations at present proposed upon gas undertakings of purchasing residuals from outside sources.
(3) The incorporation in a new Gas-Works Clauses Act of numerous powers which can only be secured to-day by special application to Parliament.
(4) Facilities to be granted whereby non-statutory companies may acquire statutory status cheaply and easily.
(5) Power to Board of Trade to grant Fringe Orders.
(6) No capital to be payable in the case of amalgamations of gas undertakings.

IV.—Certain Proposals relating Exclusively to Scottish Undertakings.

(i) Amendment of the Electric Lighting (Scotland) Act, 1890, under which local authorities owning gas-works are compelled to place upon gas consumers the burden of making good losses incurred by their electricity undertaking.

It will be seen from the attached Appendix A, dealing with this matter, that in two cases a tax was levied on gas consumers amounting to 8d. and 9d. per 1000 c.ft. to meet such losses.

(ii) Amendment of the Local Government (Scotland) Act, 1894, for the purpose of carrying out the intention of that Act and enabling district committees of county councils to adopt the Burghs Gas Supply (Scotland) Acts.

Owing to the inappropriate wording of the Local Government (Scotland) Act, 1894, it has, in effect, been found impossible for county authorities to adopt and carry into effect the provisions of the Burghs Gas Supply (Scotland) Acts within a county area. For instance, the Lanarkshire County Council were compelled in 1914 to obtain a Provisional Order to provide the appropriate machinery for the purpose of adopting the Burghs Gas Supply Acts. The machinery adopted in that case, and approved by Parliament, is set out in Appendix B hereto.

The foregoing proposals deal, it will be observed, with the amendments of the general legislation to-day governing the gas industry, and would, if adopted, necessitate the introduction of a comprehen-

sive consolidating and amending Act. This—as has already been pointed out—might entail considerable delay. The National Gas Council therefore desire to draw particular attention to the following matters, which, in their judgment, are to be regarded as urgent and as necessitating immediate legislation.

The gas industry holds the view that unless these particular points can be dealt with forthwith, it will be difficult for it to fulfil its obligation to the public satisfactorily. The National Gas Council therefore ask that a measure should be introduced in Parliament at an early date to amend the law in the following respects:

(1) Power of, and facilities for, obtaining capital expeditiously and at cheap rates.

(i.) Introduction of a minimum dividend for sliding-scale companies.

(ii) Amendment of section 1 of Gas Regulation Act, 1920, with a view to the establishment of such standard prices and dividends as will give a reasonable return to capital.

(iii.) Maximum price and dividend companies to be afforded the option of adopting the sliding-scale as amended and the minimum dividend.

(iv.) Undertakings to be able to offer shares or stock to consumers, stockholders, or employees upon terms defined by the Board of Trade.

(v.) The borrowing powers of undertakings to be made equal to the full amount of the paid-up capital.

(vi.) Statutory companies to be empowered to create and issue, in lieu of ordinary stock already authorized, redeemable or irredeemable preference stock.

(vii.) The Board of Trade to be empowered to sanction modifications in the methods of charging for gas.

(2) The widest powers should be given to undertakings, subject only to the consent of the Board of Trade, to effect amalgamation and joint working or co-operation between gas undertakings *inter se*, or between gas undertakings and any company, body, or person willing to take or to give a supply of gas.

(3) Powers to be granted to undertakings to hold shares in, or lend money to, other gas undertakings or to allied industrial concerns.

(4) Facilities to be granted whereby non-statutory companies may acquire statutory status cheaply and easily.

(5) No capital duty to be payable in the case of amalgamation of gas undertakings.

(6) As applicable to Scotland only—

(*a*) Amendment of Electric Lighting (Scotland) Act, 1890.

(*b*) Amendment of the Local Government (Scotland) Act, 1894, to enable district committees of county councils to adopt the Burghs Gas Supply (Scotland) Acts.

In conclusion, the National Gas Council desire to place on record their claim that the industry has in the past performed its obligations faithfully and well, and believe that it will be able efficiently to meet the ever-increasing demands which are being made upon it if—and only if—it is given the necessary powers and facilities to enable it to compete on more or less equal terms with its powerful rival, the electricity industry, to which the Government is now extending a large measure of financial and moral support.

The Prime Minister has publicly stated that the Government recognizes the importance of the gas industry, and has no intention of causing it injury. In the opinion of the National Gas Council, immunity from injury can only be ensured if the industry is placed in a position which will enable it to develop and progress; and it is therefore submitted with every confidence that the powers and facilities which are regarded as of the greatest urgency should be granted at the earliest possible opportunity, and that the other proposals should at once engage the earnest attention of the Board of Trade.

APPENDIX A.

Memorandum dealing with the position of Municipal Gas Undertakings in Scotland, and the effect of the Electric Lighting (Scotland) Act, 1890, in giving sanction to a local authority owning gas-works, to take profits from their gas undertaking to meet financial losses of their electricity undertaking.

1. The Act referred to is the Electric Lighting (Scotland) Act, 1890, and extends only to Scotland.

2. In Electric Lighting Orders granted by the Board of Trade, the Clause dealing with finance states: "Any deficiency of income in any year not answered out of the reserve fund shall be charged upon and payable out of the local rate."

3. The schedule to this Act provides that:

> In cases where a town council is empowered by any general or local Act to supply gas, the security upon which loans are to be contracted is the local rate, as herein described. The local rate is described as "the gas rates leviable and gas rents and other revenues recoverable under the general or local Act."

4. The effect of the Act, therefore, in the case of municipalities owning both gas and electricity undertakings is that annual deficits in the working of the electricity undertaking can be met from increased rates for gas charged to consumers. This simply means that consumers of gas can be rated at an extra price per 1000 c.ft. to meet the losses on electricity, thus relieving consumers of electricity, both for light and power, from higher charges.

5. The cases of Paisley and Alloa are cited, where considerable sums have been taken from gas revenues to meet electricity department losses. In the case of Paisley, the total sum is £34,000. Of this sum £13,479 was paid over from gas revenues in the one year 1920; and this involved an increase in the price of gas to all classes of consumers of 9d. per 1000 c.ft. In the case of Alloa the total sum met by gas consumers to meet electricity losses is £19,343. Recurring losses of the Electricity Department during the past two years of approximately £5000 have been assessed for by the Town Council by levying a tax on gas consumers equal to 8d. per 1000 c.ft. The total accrued working losses of the Electricity Department to May 15, 1926, amount to £39,000 (approx.). If this large sum with accrued interest is also to be met by consumers of gas, it will be realized how serious is the burden.

It is contended that—

The Act of 1890 places an unfair burden upon a particular class of the community, and that circumstances of gas and electricity supply have altogether altered since 1890.

The classes in a community using gas and electricity are distinct and different. There are large users of electricity for power and light in mills and industrial works, who are not gas consumers, and therefore contribute nothing through the gas rates, while benefiting from lower electricity charges due to the gas subsidy.

The burden is particularly severe upon slot meter consumers, chiefly the middle-class and working-class members of the community. Slot meter consumers contribute close upon 60 p.ct. of the total gas revenues. This class of consumer, therefore, has to bear the larger proportion of the burden, equal to 25 p.ct. addition on the price of gas. There is also the case of consumers of gas outwith the electricity supply area of the Burgh who are taxed with the extra gas rate, but who cannot be provided by the Burgh with a supply of electricity.

The Act gives power to the placing of a subsidy upon users of gas which is a public utility requirement and favours electricity. The practice is detrimental to the extended use of gas.

The evidences stated present a condition of things that could not have been contemplated by the Legislature when the Act of 1890 was passed, and supply the strongest possible reasons for the repeal of the provision.

It is suggested that, in fairness and equity, as the electricity department of a local authority is the property of the ratepayers as a community, the financial losses incurred by the working of the town council's electricity department would be evenly met from the general rates.

APPENDIX B.

Extract from Lanarkshire Gas Order Confirmation Act, 1914.

4. In lieu of the provisions of section 4 and section 5 of the Burghs Gas Supply Act which relate to the adoption of that Act as modified by section 44 of the Local Government (Scotland) Act, 1894, the following provisions shall have effect in relation to the adoption of the Burghs Gas Supply Act within the county (that is to say):

(1) It shall be lawful for a district committee, by a majority of not less than two-thirds of the members thereof present and voting at a meeting of the district committee specially called for the purpose, to resolve that the Burghs Gas Supply Act be adopted in, and applied to, a special lighting district within their jurisdiction and to any area within their jurisdiction adjacent to the special lighting district to which the resolution relates.

(2) Not less than twenty-one days' notice of such meeting and of the purpose thereof shall be given to each member of the district committee, and a notice of the meeting and of the purpose thereof shall be inserted in the "Edinburgh Gazette" and in one or more newspapers circulating within the special lighting or other district to which the proposed resolution relates not less than twenty-one days before the date of the meeting.

(3) A copy of a resolution of adoption shall be forthwith transmitted to the county council.

(4) A resolution of adoption by a district committee shall have no validity unless confirmed by a resolution of the county council passed by a majority of not less than two-thirds of the members of the council present and voting at a meeting specially called for the purpose.

(5) Not less than twenty-one days' notice of a meeting of the county council to consider a resolution of adoption and of the purpose thereof shall be given to each member of the county council, and a notice of the meeting and of the purpose thereof shall be inserted in one or more newspapers circulating within the special lighting or other district to which the resolution relates.

(6) The county council may confirm or disapprove of a resolution of adoption, or may confirm the same subject to the omission in whole or in part of so much (if any) of the district to which the resolution relates as is situate outwith a special lighting district or special lighting districts.

(7) A resolution of adoption if and as confirmed by the county council shall be published in the "Edinburgh Gazette" and in one or more newspapers circulating in the special lighting or other district to which the resolution relates.

(8) Within twenty-one days after the date of the publication in the "Edinburgh Gazette," under the immediately preceding sub-section of a resolution of adoption as confirmed by the county council, it shall be competent for any ratepayer within the special lighting or other district to which the resolution relates to appeal against the resolution to the sheriff; and the sheriff may either approve or disapprove of such resolution, or may approve of the same subject to the omission in whole or in part of so much (if any) of the district to which the resolution relates as is situate outwith a special lighting district or special lighting districts. Provided that if the sheriff shall make any such alteration of the district the district committee may at any time within three months after the date of the determination of the sheriff, if they think fit, withdraw the resolution, which shall thereupon cease to have effect.

(9) The decision of the sheriff shall (subject to the power of the district committee to withdraw the resolution) be final and binding except where it is pronounced by a sheriff-substitute, in which case it may be appealed to the sheriff.

(10) If no appeal against the resolution is made to the sheriff under sub-section (8) of this section, or if the resolution is ap-

proved by the sheriff with or without alteration, and is not withdrawn by the district committee, the sheriff shall authorize the resolution with such alteration (if any) as he may have made thereon to be registered in the sheriff court books of the county; and the provisions of the Burghs Gas Supply Act as amended by this Order shall be in force from and after such registration within the special lighting or other district to which the resolution relates.

(11) If the resolution of the district committee is disapproved by the county council, or if such resolution as confirmed by the county council is disapproved by the sheriff, or if approved with alteration is withdrawn by the district committee, it shall not be lawful for the district committee again to resolve that the Burghs Gas Supply Act be adopted and applied in and to the same district as that to which the resolution related before the expiration of two years after the date of disapproval or withdrawal.

(12) In this section the expression "the sheriff" means the sheriff of the county, and includes his substitutes other than a sheriff-substitute resident within a special lighting or other district to which a resolution of adoption under this section relates.

EASTERN COUNTIES GAS MANAGERS' ASSOCIATION.

FORMAL MEETING IN LONDON.

A formal meeting of the Association, at which there was only a small attendance of members, took place last Thursday afternoon (Sept. 23) in the Board Room at the offices of the National Gas Council, 28, Grosvenor Gardens, S.W.—Mr. Frank Prentice, of Ipswich (the President), in the chair. It had previously been explained by the Hon. Secretary (Mr W. H. Mainwaring, of Lincoln), in a circular to the members, that the spring meeting of the Association, which had been fully arranged for, was necessarily abandoned in consequence of the general strike. The coal stoppage had persisted from that time; and in the opinion of the President and Committee, existing conditions would, in such a district as theirs, have rendered the holding of a successful gathering on the usual lines very doubtful. It had been decided, therefore, not to hold the ordinary autumn meeting this year; but under the rules it was necessary to transact the business of the Association, and accordingly this meeting was called in order that the election of officers and other formal matters might be disposed of.

The Programme Postponed.

The President remarked that he had been hoping to see the members at Ipswich for the spring meeting, and then, when the coal trouble prevented this, the idea was that the meeting there should be held during the autumn. But as time went on, so far from their difficulties decreasing, they had shown a tendency to increase, with the result that the Committee, who held a meeting at Peterborough to decide what should be done, had thought it wise to postpone the regular autumn meeting, and to substitute for it the present informal gathering, so as to maintain the continuity of the proceedings and link up 1925 with 1927. The proposal was to carry out in its entirety in 1927 the programme of 1926. They suggested that he (Mr. Prentice) should remain President for a second year, and that Mr. J. B. Hansford, of Bedford, should similarly retain his position as Vice-President. It was for the meeting to endorse the recommendations of the Committee. If the members decided to go to Ipswich next spring (as he hoped they would do) it might possibly prove a more valuable meeting than it would have been this year, inasmuch as he hoped by that time to have a tankless gasholder at work—or if not actually at work, at any rate in a far stage of construction. Inasmuch as this was a new departure in gas engineering, so far as this country was concerned—he believed it would be the first holder to be erected on this principle here—it might prove interesting to the members to hear the description of the holder which he proposed then to give them. They would be able to inspect its working, and to judge of its advantages and its disadvantages—if there were any.

Minutes of Last Meeting.

The President proposed the confirmation of the minutes of the last general meeting, held at Stamford, and this was agreed to.

Loss by Death.

The President said he would ask the members to stand while he referred to the tragic death of a fellow-worker, Mr. E. Woolnough, of Thetford, which followed upon an accident that occurred to him in the course of his duties. The Secretary, with commendable foresight, wrote a letter of condolence to the widow and family; and he asked the members to endorse this action, which they did in a suitable manner.

An Honorary Member.

The President remarked that the next business was the election of an honorary member of the Association. The gasworks at Wymondham, near Norwich, had been taken over by the British Gas Light Company, and so had come under the control of Mr. Thomas Glover. The Engineer at Wymondham—Mr. C. D. Banham—had been a member of their Association for a great many years, and he felt rather keenly the severance which was consequent on this change. It had therefore been suggested by the Secretary that they should elect Mr. Banham an honorary member; and he proposed that this should be done.

Mr. C. G. Grimwood (Sudbury) said he had known Mr. Banham for a good many years, and was aware of the great interest he always took in the work of the Association. He therefore seconded the motion, which was unanimously agreed to.

Benevolent Fund Contribution.

The President remarked that for some years it had been their custom to vote £5 5s. to the Benevolent Fund of the Institution of Gas Engineers; but it was necessary that this course should be endorsed by the members. Personally, he thought very highly of the fund, as he knew from many gratifying letters he had received that it served an extremely good purpose. He therefore moved that they contribute £5 5s. as before.

This was agreed to.

The Accounts.

The President then moved the adoption of the accounts.

Mr. J. H. Troughton (Newmarket) seconded, and expressed his pleasure that the Association was being carried on so economically. The balance in hand—£37 7s. 10d.—was practically the same as the amount brought forward at the commencement of the year. The Secretary and the Committee had managed affairs very well indeed.

The accounts were adopted.

Office-Bearers.

On the proposition of Mr. Troughton, seconded by Mr. E. G. Smithard (King's Lynn), the existing officers were re-elected to serve the Association during 1927, with the addition to the existing Committee of Mr. H. Green (Stamford) and Mr. A. Gregory (Harwich). Thus temporarily the Committee will consist of seven members, instead of five.

Mr. Smithard said the members were deeply indebted to the President for all that he had done on behalf of the Association, and of the industry at large.

The President declared that the pleasant friendships and relationships which one formed in the gas industry through any little office one might take up were ample reward for any work and anxiety that might be involved. The Association would not, however, get far without the efficient work of their energetic Secretary.

Representative on the Institution Council.

Moved by Mr. Troughton, and seconded by Mr. J. W. Auchterlonie (Cambridge), the President was appointed as the representative of the Association on the Council of the Institution of Gas Engineers.

The Coal Situation.

The President, in the course of some remarks on the coal situation, said he had fortunately been in a position to supply some coal to a good many people who had found themselves in difficulties. During a conversation, the representative of an important colliery in the North had remarked to him that, so far as he could see, there was no likelihood that the negotiations at present going on between the miners and the Government would come to anything at all. This representative was quite convinced that the only end to the strike would be the drifting back to work of the men. One of the collieries in Durham with which he was connected—the Pelmeller—was at work now, and raising 500 tons a day; and he was satisfied that the example thus set in Durham would spread. In fact, this gentleman said he would be surprised if there was not, in a week or two, a rush back to work.

Place of Next Meeting.

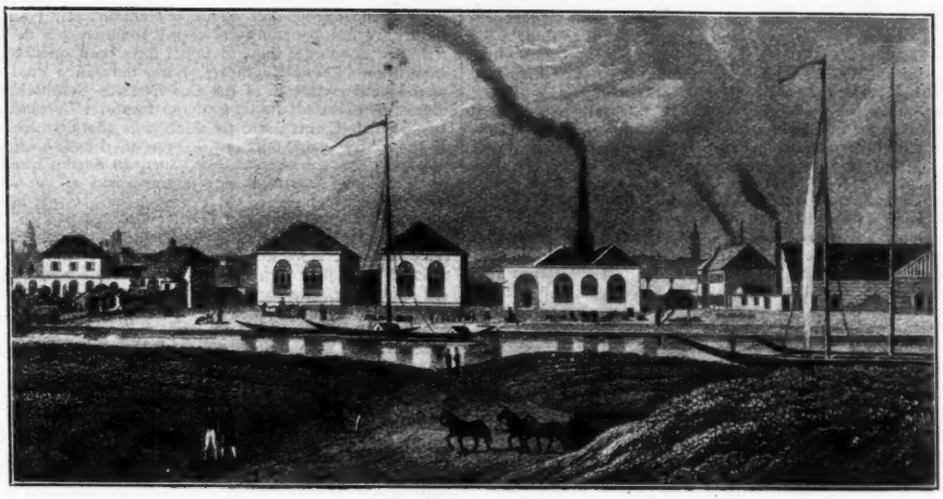
The President said that, to put everything in order, he would move that the place of meeting of the Association in the spring be Ipswich; and he had the authority of his good friend Mr. Auchterlonie to say that, unless anything unforeseen occurred, he hoped to invite the members to Cambridge for the autumn meeting.

Mr. Auchterlonie seconded the motion, which was passed.

This brought the proceedings to a close.

CENTENARY CELEBRATIONS OF THE GAS SUPPLY IN BERLIN.

By A. F. P. Hayman.



THE FIRST GAS-WORKS IN BERLIN, 1826.

A hundred years having elapsed since the Imperial Continental Gas Association first started the supply of gas in Berlin, the Gas Betriebs Gesellschaft, which has now taken the place of the "I.C.G.A.," did not wish to let the occasion pass without commemorating in a suitable manner such an interesting event. They issued a cordial invitation to the Directors and some of the old members of the Berlin staff of the "I.C.G.A.," and an excellent programme was drawn up.

Mr. H. J. Palmer and Mr. George Jessel, whose families had been connected with the "I.C.G.A." since its foundation, attended on behalf of the Board, and Mr. A. F. P. Hayman, an old member of the Berlin staff, represented the Institution of Gas Engineers—the President being unfortunately prevented from doing so owing to the annual meeting of the Institution, which took place during the same week. Mr. E. J. Hutchence, another old member of the Berlin staff, represented the Gas Light and Coke Company.

The celebrations commenced on Sept. 19, when Mr. Carl Joerger, the late Berlin Agent for the "I.C.G.A.," entertained the English guests and a few others to lunch at his charming villa on the banks of the Wannsee Lake near Potsdam.

The Banquet.

In the evening a banquet was held at the Hotel Kaiserhof, presided over by Herr Heck, the President of the "G.B.G." There were present, in addition to the above-mentioned gentlemen, various authorities of the City and the Province; the President and Vice-President of the Deutscher Verein von Gas und Wasserfachmannern; Mr. Leonard Korting, a former Manager of the "I.C.G.A.'s Hanover Works; and the members of the higher staff of the Gas Betriebs Gesellschaft. Herr Heck, in an eloquent speech, extended a cordial welcome to all the guests, and Herr Ernst Korting gave the toast of the Imperial Continental Gas Association. His speech was as follows:

I have the privilege of adding to the eloquent speech of our Chairman a few words in honour of the Imperial Continental Gas Association, who a century ago were the pioneers of the gas industry on the Continent, and of whom we have the great pleasure of seeing representatives in our midst both from the Board of Directors and from the old Berlin staff.

You all have heard of the ancient Greek seer Tiresias—how, above all mortals, he was first a woman and afterwards a man, and how Jupiter and Juno, in a conjugal dispute about the joys derivable from the manifestations of love, applied to him as umpire. You will also remember his deliciously plain and mathematically exact answer—Woman enjoys the bliss of love nine times more than man. Well, gentlemen, I am in a somewhat similar position to Tiresias. As Manager of the Berlin Station I served for many years a first-rate English Board of Directors, and then for a long time an equally first-rate German one. But if you ask me from which of the two I derived the greater share of bliss, I cannot give you such a precise answer as the celebrated Greek. I think, however, the principal difference between a German and an English Company is this. In Germany the main part of the activity and the responsibility is allotted to the Manager (Vorstand), under the control not of the Board as a body, but mostly of the Chairman. Not so in England. There all the Directors go regularly and minutely into all the various items of business; they not only control, they direct everything. If a Director drops out, and a new one enters instead, he soon falls into line, and gets into the spirit of the undertaking. Such an English Board is therefore admirably suited for a fixed policy with regard to technical, political, and staff matters; it is a wonderful instrument for tradition. This tendency of evolution, not of revolution, is in the case of the "I.C.G.A." still more accentuated by the fact that on the Board and in the Staff the sons succeeded the fathers. If I am not mistaken, the forefathers of Messrs. Palmer and Jessel, whom we see here to-day, belonged to the Board a hundred years ago.

"I.C.G.A." Recollections.

As another important quality adding to the prestige of an English Board may be mentioned their absolute integrity; it being in the United Kingdom an established rule that no Director is permitted to further his private or political interests within the sphere of action of the Company. The Directors therefore exercise, from both a moral and a business point of view, an unparalleled authority; and this and their highly-developed art of treating the staff with a firm kindness and a courteous dignity have within the "I.C.G.A." brought about a wonderful loyalty and an *esprit de corps* which have made the work in the Company efficient and highly satisfactory. In spite of the privilege I have enjoyed since 1918 in working under the direction of one of the most eminent men of business in Germany, I must say that the "I.C.G.A." has been the great experience of my life. This is perhaps not to be wondered at, as I was born in an "I.C.G.A." atmosphere, and played as a child in the embrasure of the very window through which old Mrs. Drory, and after her my grandmother, sold the first coke in Germany. But it is the same with my Berlin colleagues. We all cherish our "I.C.G.A." recollections, and religiously try to keep up the "I.C.G.A." spirit. Moreover, the eminent Dessau concern, to which we now belong, has not since 1918 found any reason for material alterations. All our books, the balance-sheet, the profit and loss, and the carbonizing accounts are the same as in 1914; and if the "I.C.G.A." came into possession again, we would have only to re-open the London correspondence, and everything would run smoothly. I cannot possibly give you in a short time an adequate description of the old "I.C.G.A." It is a pity, I think, that this wonderful Company and its history have not found a great novelist like Mr. Galsworthy. He might have worked it into a story of British foreign enterprise in the era of Queen Victoria fully as interesting as his Forsythe Saga, dealing with English individualism in the same period.

Old Traditions.

Mr. H. J. Palmer, replying for the Board, said:

It is, of course, a great pleasure for me to be present at these celebrations. The friendly welcome of the President, Mr. Heck, and the references of our old friend, Mr. Korting, to the services of the Imperial Continental Gas Association during the greater part of the hundred years, will always be remembered by me and the other members of the Association here to-night. Mr. Korting made several remarks on the good effect of the old traditions of the "I.C.G.A.;" and it is gratifying to hear that all the methods of working and book-keeping, as well as the staff themselves, are almost the same under the new régime as they were when the "I.C.G.A." gave up its administration. Mr. George Jessel and I are happily imbued with these traditions—Mr. Jessel being the fifth generation to serve on the Board, while I am the direct descendant in the fourth generation of one of the five members of the Committee who conducted the negotiations which led to the introduction of gas lighting in Berlin one hundred years ago. It was my great-grandfather who travelled in a carriage all the way from the coast of Holland to complete the agreement; it may also be of interest that the four members of my family have jointly served the Board for 91 years.

One of the claims put forward in the original prospectus issued in London in connection with the formation of the Imperial Continental Gas Association was that the enterprise of extending gas illumination to the chief towns of the Continent would confer increased happiness and comfort to the inhabitants. Surely no one will deny that gas has been, and continues to be, a boon to all people. In the early days of gas lighting in Berlin there were many people vehemently opposed

to its use, who put forward the following arguments, which now-a-days are laughable. "Gas lighting," they said, "is contrary to the will of God, who has purposely divided the day from the night. Why should the householder pay for what is of no use to him?" Or again, it was said by the police: "The bright light makes horses shy, thieves keener, and lengthens the hours available for drinking." Surely strange views on the progress and evolution of mankind.

In the very early gas lighting days, the manager may not have needed much technical training, since the plant was of such a simple order. The holders were only 15 metres in diameter and 5 metres high, while the tanks were wooden vats. It was not long, however, before the manager had to be possessed of exceptional attributes. The gas industry of Berlin has been more than fortunate in its local administrators, dating from the appointment in 1825 of Mr. G. W. Drory, the head of that remarkable family who rendered such great service to the gas industry under the auspices of the "I.C.G.A." down to the present time, when the honours and responsibilities of the Berlin gas supply are shared, under a different régime, by several experts of outstanding qualification. It is a source of genuine and general gratification that among these is to be seen Mr. E. Korting, the distinguished son of a gas engineer, Mr. L. Korting, who has also rendered noteworthy service to the gas industry in Germany—namely, at Hanover—during more than half-a-century. It gives me great pleasure to see them both here to-night.

Justifiable Optimism.

On the general progress and future prospects of our industry others, no doubt, will speak this evening; but I must say that I am an optimist, knowing that men at the head of large gas undertakings will keep abreast of the times by scientific research, by introducing new methods to meet new circumstances, and by taking a broad view of the needs of their neighbours, and will be well able to compete with other forms of heating and lighting. Berlin has had the reputation of being the best lighted town in the world, mainly by gas. The difficulties of the past ten years have been a great handicap in maintaining this reputation, but I understand that greater numbers of high-pressure burners will shortly be in use in the streets, and I consider the high-pressure burners give the most efficient and most agreeable street lighting available at present.

As a representative of the Imperial Continental Gas Association at this gathering of old and new friends, I can only conclude by tendering once more our grateful thanks for the hospitality extended to us to-night, for the kind thoughts so aptly expressed on the past services of our Company, and for the delightful arrangements made for our entertainment during the next two days; and I am happy to convey to all the administrators of the gas industry of Berlin the sincerest good wishes of the present Directors and Staff of the Imperial Continental Gas Association for the expansion and prosperity of this long-established service to mankind.

Co-Operation.

Mr. Hayman replied on behalf of the Institution of Gas Engineers, and spoke as follows:

I have been asked by the President of the Institution of Gas Engineers, Mr. Botley, to express his hearty greetings to his German colleagues, and to say how very much he regrets not being able to be present with you at these centenary celebrations of the introduction of gas lighting in the City of Berlin. I esteem it a great honour to have been asked by the President and Council of the Institution to represent them on this occasion; and it is for me especially a great pleasure to have the opportunity of meeting my German colleagues again. In times past the members of the Institution have had much useful co-operation with their German colleagues; and it is therefore gratifying that we can be participating in these centenary celebrations. As you all know, many British engineers have intimate acquaintance with the gas-works and gas plant in Germany; and in the future we shall look for greater co-operation.

We remember with admiration and esteem some of the great German engineers connected with the gas industry, to whom we all owe so much—gentlemen whose names were household words in England. There were the late Herr Dr. Von Oechelhauser, and Herr Prof. Dr. Bunte, who rendered such eminent services to the gas industry. We remember the late Herr Schimming, to whose technical ability and skill the Municipality of Berlin owes the great works at Tegel, which were visited by the members of the Institution in 1909. Fortunately you still have among you men who are rendering great services to the gas industry, and whose names are well-known. I should like especially to mention Herr Dr. Bueb, to whom we owe the vertical system of retort, and Herr Ernst Korting, who has done so much in the development of that system. I am also glad to see here Herr Dr. Bunte, who is following so worthily in the footsteps of his illustrious father, and to be able to greet on this occasion the President of the Deutscher Verein von Gas und Wasserfachmannern, Herr Dr. Kuhne. It is a great pleasure to me to see that Herr Korting's father, Herr Leonard Korting—that grand old man of the German gas industry—is with us. I trust that he may long remain in good health and vigour as a revered member of the profession he has so long adorned. It was in the year 1910 that I had the privilege of accompanying the members of the German Gas Institution on their visit to England, when they inspected the great works of the Gas Light and Coke Company and the South Metropolitan Company, and afterwards proceeded to Scotland, where they were able to witness the latest developments in gas engineering at Edinburgh and Glasgow. I hope that all those who took part in that visit still retain pleasant recollections of it.

Recent Developments.

In the past ten years, and particularly in recent times, there have been great developments in the gas industry in Great Britain. The introduction of the thermal system of charging is particularly striking because it has led to notable developments in the production and utilization of gas. There have been great improvements in the design and use of horizontal settings, in carburetted water gas plant, and particularly in vertical retorts and steaming. All this progress is tending to utilize the raw materials to better advantage; and the standard of the thermal energy produced and utilized per ton of coal is continually being raised. In Great Britain we are looking with interest on the development of the waterless gasholder. Until recently we had no examples of such construction; but I understand that we shall have an opportunity of seeing some erected in England shortly.

I must not forget that, though I have been speaking on behalf of the Institution of Gas Engineers, I am here in a dual capacity, thanks to the kind invitation of the Gas Betriebs Gesellschaft—as one of the oldest members of the staff of the Imperial Continental Gas Association, which I am proud to think was the first to light the City of Berlin with gas one hundred years ago. I look back with the greatest of pleasure on the twelve years I spent in Berlin, when for a great part of that time I was in charge of the works at the Gitschiner Strasse. The experience I gained there was of the greatest benefit to me, more especially that it was my privilege to work with one of the most brilliant gas engineers that Germany has produced, and who was at the same time a loyal and faithful officer of the "I.C.G.A." I refer to Herr Ernst Korting, to whose wise counsels and practical engineering ability we owe so much. It is about a quarter-of-a-century ago that Mr. Edward Drory, a highly valued member of that great family of Drory who were so long and so honourably connected with the "I.C.G.A.," with the assistance of Mr. Ernst Korting, completed the construction of the new works at Mariendorf, which were a model of their kind. I remember how engineers came from all parts of the globe to study what was then the most up-to-date plant in gas engineering. Berlin became the Mecca for all engineers who were desirous of adopting new scientific methods on their works. Visitors had the opportunity of admiring the public lighting of the City, which was then considered to be one of the best lighted in Europe. We have seen what marvellous progress has been made in this city during the last hundred years, in both the manufacture and the supply of gas; and great credit is due to all concerned for the results achieved. The work of supplying gas to Berlin and suburbs, which the Imperial Continental Gas Association carried out so well in the interests of all whom it served, has now passed into the hands of the Gas Betriebs Gesellschaft. On behalf of the Institution of Gas Engineers, I beg to extend to them our heartfelt good wishes for their future prosperity and success; and I couple with the toast its esteemed President, Mr. Heck, and the Managing Director, my old friend Mr. Ernst Korting.

Mr. E. J. Hutchence, speaking in German, conveyed the hearty greetings and cordial wishes of the Gas Light and Coke Company, who, he said, might be regarded as the elder sister of the Berlin undertaking, having been founded 14 years earlier—in 1812. It was interesting to note that whereas Berlin owed its gas supply to an English Company, the German Winser was largely concerned in the beginnings of the Gas Light and Coke Company.

Herr Kuhne, the President of the Deutscher Verein von Gas und Wasserfachmannern, expressed the pleasure it gave him to represent the German Gas Institution. He stated how much he appreciated the honour which was being done him by his election as an Hon. Member of the Institution of Gas Engineers at their annual meeting in London, and expressed the hope that friendly relations might always exist between the two Institutions.

The Chief Engineer of the Berlin Municipal Gas-Works said how much he appreciated having been asked to participate in the centenary celebrations, and referred with satisfaction to the good relations which existed between the town and the Gas Betriebs Gesellschaft.

Herr Leonard Korting gave some amusing reminiscences of the early days of gas lighting in Hanover.

Some Visits.

On Monday, Sept. 20, the guests of the "G.B.G." visited the Schoneberg Works, where Dr. Geipert, the Chief Chemist of the Company, gave a short lecture, with demonstrations of his new method of analyzing coal in the laboratory, by which he claims to obtain the same results in two hours as in the trial gas plants with ordinary horizontal retorts such as exist on most big works, where the tests last a considerable time and entail a good deal of expense.

Afterwards the vertical chamber ovens at the Schoneberg Works were inspected; a description of these being given in a pamphlet, by Herr Korting, dedicated to the Directors of the Imperial Continental Gas Association.

The guests then proceeded to the Gitschiner Strasse Works, which cover part of the site of the original works built in 1826. They visited here the new showrooms, where all the latest designs of German heating, cooking, and lighting appliances were tastefully exhibited.

After a short inspection of the works, to which few alterations have been made in recent years—except that a part of the old slopers are being pulled down to make room for vertical furnaces of the usual Dessau system—the guests adjourned to the offices of the Company, where lunch was served, at which Herr Ernst Korting presided, and welcomed the guests. Mr. George Jessel and Herr Joerger replied.

At its conclusion, a motor coach was in readiness to convey the party to Potsdam, entailing a lovely drive through the Grunewald Forest. The visitors alighted at the famous palace of Frederic the Great, "Sans Souci," in which great interest was taken. After a walk through the beautiful grounds of the palace, they proceeded to the river, and embarked on a steamer for a trip through the Wannsee Lake, which, favoured by

splendid weather, was greatly enjoyed. Landing at the Heer Strasse, they were driven back to Berlin through this magnificent new Boulevard, several miles in length, which connects the city with the old military camp at Doberitz.

Early the next morning the guests proceeded to the Tempelhofer Feld, to be in readiness for what Herr Korting, an ardent lover of aviation, described as the "clou" of the whole programme. Two of the largest and finest passenger aeroplanes of the Junkers Aviation Company were placed at the disposal of the party, by Herr Heck, who is also Vice-President of this Company. An enjoyable trip was made in splendid weather to Dessau; this being the first experience in aviation of most of the party. It was the unanimous opinion that air transport is a most exhilarating form of conveyance. After a journey of about 45 minutes, a landing was made at Dessau, where, under the guidance of Herr Heck, the important works of the Junkers Aviation Company were inspected, and where was seen a section of a large trans-oceanic aeroplane intended to carry 100 passengers, for whom accommodation in the most up-to-date style as regards comfort, &c., is provided, solely in the wings.

A visit was next paid to the works of the Askania Company, one of the most important in Germany for the manufacture of gas heating and cooking appliances, and gas meters. Their works appeared to be extremely well conducted, and the apparatus shown was of the most up-to-date pattern.

The Oldest German Gas Company.

Luncheon was offered to the guests in the offices of the Deutsche Continentale Gas Gesellschaft, the oldest German Gas Company, founded by the well-known family of Von Oechelhauser, and of which Herr Heck is now the moving spirit. He welcomed their guests in an eloquent speech, in which he referred to the past history of the Deutsche Continentale Gas Gesellschaft, which had done so much for the gas industry in Germany. Mr. H. J. Palmer cordially replied on behalf of the English guests. The Burgomaster of Dessau also replied, and expressed the pleasure it gave him to welcome the visitors to his town, which was famous for its art and culture, as well as for its important industrial undertakings. He hoped that foreign tourists would more and more wend their way thither, where they would find much to interest them, not only in the town itself, but also in its surroundings. Herr Lempelius, Director of the Gas Propaganda Service in Germany, gave striking testimony to the great services rendered to the gas industry by the Company who were acting as hosts.

A motor coach then conveyed the party to Worlitz, where the beautiful gardens and park surrounding the country palace of the Dukes of Anhalt were visited. The guests were rowed round in boats on the lake and intersecting canals, from which a fine view could be obtained of the various curious temples and grottos which had been erected in the grounds by a former duke.

This concluded the series of visits and excursions, which had been so admirably organized by the Gas Betriebs Gesellschaft in commemoration of the centenary of the Berlin gas supply by the Imperial Continental Gas Association. After taking leave of Herr Heck and Herr Korting, to whom the visitors expressed their best thanks for the wonderful reception and extremely kind hospitality which had been shown, which had made the visit so enjoyable and memorable, they motored to Wittenberg, and later entrained for Berlin.

On the following morning some of the visitors accompanied the Directors of the Imperial Continental Gas Association on a visit to the Mariendorf Works, where, after paying homage at the Memorial Stone erected in the grounds to Mr. Edward Drory, the founder of the works, they were shown round by Dr. Geipert and Mr. Korting, Jun., and were glad to have the opportunity of inspecting once again this model works, to which in the course of the last quarter of a century so many gas engineers had been attracted.

In conclusion, it should be mentioned that the courtesy and kind help which was shown by all the assistants of Mr. Korting, who still retain pleasant recollections of their service with the "I.C.G.A.," were greatly appreciated.

RELATION BETWEEN COAL ANALYSIS AND CARBONIZATION PRODUCTS.

By S. Qvarfort, Chief Chemist at the Wärta Gas-Works of Stockholm.

The relation between coal analysis and the products formed by the carbonization of coal is a matter of great interest in the technics of gas manufacture. It has long been known that the quantity and the composition of the gas bear a certain relation to the nature of the coal. We rightly expect to obtain more gas, and one of a higher calorific value, from a coal containing 30 p.ct. of volatiles than from one containing only 15 p.ct. But we know also that a coal yielding only 22 p.ct. of volatiles may produce nearly the same quantity of gas, of practically the same calorific value, as another coal containing 30 p.ct. of volatile matter. One turns for explanation to the ultimate analysis of the coal, and comes to the conclusion that the greater the oxygen content, the lower will be the calorific value and the yield of the gas produced. We might well say that the oxygen "eats" the gas. We cannot therefore expect straight-line relationships between the yields of carbonization products and the analysis of the coal. However, curves can be obtained which express this relationship empirically.

As a matter of fact, little seems to have been done to construct such relationship diagrams. This is natural when one considers the difficulty of carrying out large-scale carbonization tests, and when one bears in mind that laboratory tests tend to be misleading. Apart from the impossibility of running the whole plant as a testing one, as a rule a gas-works only operates with comparatively few coals. Consequently, the only way to obtain reliable results is to run a special large-scale plant which as far as possible is a replica of the actual one used for manufacture.

Experimental Plant at the Stockholm Gas-Works.

The Stockholm Gas-Works possesses such a plant, which has been in operation since 1921. This testing plant is under the direction of the author, and is managed by an Assistant Engineer, Mr. B. Dahlman. In this unit, tests have been made of samples of different coals, to find out their suitability for gas making. The plant is entirely separate from the gas-works, and consists of a retort house equipped with a setting of two horizontal chamotte retorts charged mechanically by a scoop. There are all the necessary units for purifying and measuring all the products formed. Carbonization has been carried out at 1200° C. (measured in the channels surrounding the retorts). It is possible to connect one of the chambers of the ordinary plant with the testing plant; but generally the test setting is used. The weight of the total charge in both retorts is about 250 kg. As the charging period is six hours, this is equivalent to 1000 kg. in 24 hours. The capacity of the other apparatus is 4000 cub.m. of gas per 24 hours.

Value of the Tests.

Up to the present about fifty coals have been tested in the plant; and these tests have greatly assisted the selection of suitable coals for use in the ordinary plant. They have also given a good insight into the varying conditions of carbonization, and the relation between the analysis of coal and the products formed. They have given a good idea of both the quantity and the quality of the products likely to result from working in the ordinary plant. This is true with one exception—the quality of the coke, which is of fundamental importance for the economy of a gas-works. The method of carbonization has too great an influence to enable us to gain a true indication of the quality of the coke which would result in actual practice. To complete the information, therefore, tests on this point are made in a chamber of the ordinary plant.

After coke, the most important factor is the quantity and quality of the gas. This, in fact, decides the usefulness of the coal. A coal which yields gas of a low calorific value is useless—at any rate when carbonized alone. It may perhaps be blended with another coal yielding gas of a higher calorific value; but to be able to blend successfully, the characteristics of the coals blended must be known exactly. Before one can judge the worth of the coals, the yields of tar, ammonia, and benzole must be known. All these quantities can be determined with sufficient accuracy in the test plant described.

The results obtained from the testing plant have demonstrated that, by means of empiric diagrams, the proportions of carbonization products may be predicted—the coke yield; distribution of sulphur in gas and coke; yield, specific gravity, calorific value, and composition of the gas; and the yields of benzole by oil-washing. The yields of tar and ammonia, however, show no relation to the coal analysis.

The reason for this fact is difficult to find. We know that the temperature of the ovens, and the method of carbonization, have considerable influence on the quantity of tar and ammonia produced. With regard to ammonia, the effect of moisture in the coal has also to be taken into account. But as all these factors are constant in the testing plant, these facts offer no solution. The tar seems to be dependent on the content of hydrogen, as well as of oxygen in the coal; and the quantity

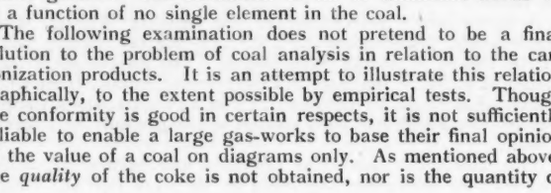
of tar produced possibly increases as the amounts of these elements become greater. It is difficult to decide which element has the greatest influence. One might expect to obtain a high ammonia yield, if both the hydrogen and the nitrogen contents of the coal are large. This, however, by no means follows, for a third factor must be considered—viz., the oxygen may combine with the hydrogen in the coal. Consequently the formation of ammonia decreases as the oxygen in the coal becomes greater. The formation of tar or ammonia seems to be a function of no single element in the coal.

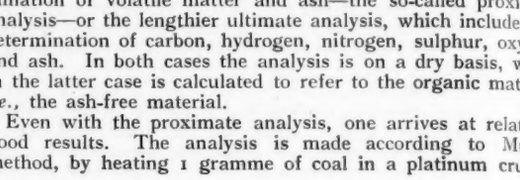
The following examination does not pretend to be a final solution to the problem of coal analysis in relation to the carbonization products. It is an attempt to illustrate this relation graphically, to the extent possible by empirical tests. Though the conformity is good in certain respects, it is not sufficiently reliable to enable a large gas-works to base their final opinion of the value of a coal on diagrams only. As mentioned above, the *quality* of the coke is not obtained, nor is the quantity of tar and ammonia. Nevertheless, the diagrams may be of value as a rough indication of the value of different coals, and may prevent tests being made on useless varieties. For smaller gas-works, who do not blend their coals, the diagrams ought to be of greater direct use, for by them it is possible to estimate the value of certain coals for carbonization purposes.

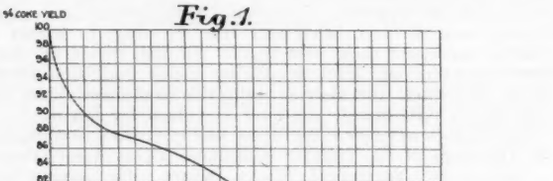
Proximate and Ultimate Analyses.

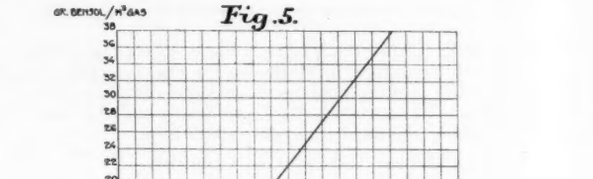
For the analysis of coal, one employs either a simple determination of volatile matter and ash—the so-called proximate analysis—or the lengthier ultimate analysis, which includes the determination of carbon, hydrogen, nitrogen, sulphur, oxygen, and ash. In both cases the analysis is on a dry basis, which in the latter case is calculated to refer to the organic matter—*i.e.*, the ash-free material.

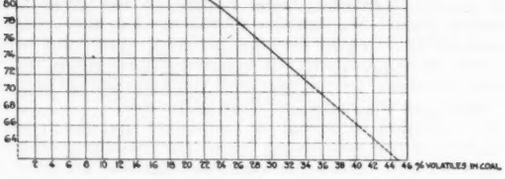
Even with the proximate analysis, one arrives at relatively good results. The analysis is made according to Muck's method, by heating 1 gramme of coal in a platinum crucible

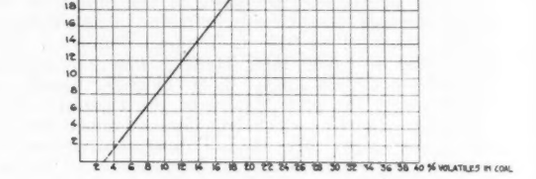


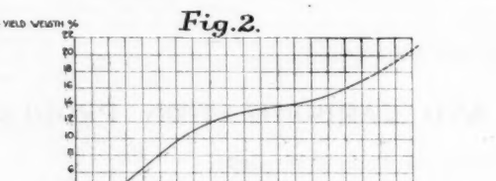












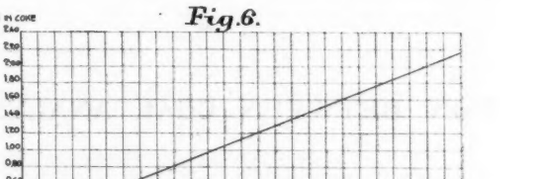


Fig. 1.—Coke Yield, P.Ct.
Fig. 2.—Gas Yield, Weight P.Ct.
Fig. 3.—Gas Yield, Cub.M. per Ton.
Fig. 4.—Calorific Value of Gas, Cal. per Cub.M.

Fig. 5.—Benzole Yield, Grammes per Cub.M. of Gas.
Fig. 6.—Sulphur in Coke, P.Ct.
Fig. 7.—Hydrogen Sulphide in Gas, Vol. P.Ct.
Fig. 8.—Spec. Gravity of Gas in Relation to Air.

with a cover, at first for three minutes over a bunsen burner, and then for a further three minutes over a blast burner, in each case with a fixed height of the flame. Knowing the volatile matter, the following factors may be determined: Coke yield, gas yield by weight and volume, calorific value of the gas, and benzole in grammes per cub.m. of gas. The content of volatile matter of the coals tested varies from 4·7 to 35 p.ct.

The Coke Yield (see fig. 1) is in inverse ratio to the gas yield, when the content of volatiles is over 24 p.ct. When the latter is less than 24 p.ct., the gas yield deviates from this rule, and becomes proportionally less as the yields of tar and ammonia become higher. The curve approaches 100 p.ct. yield at 0 p.ct. volatiles.

The Gas Yield by Weight (p.ct. of the coal) (see fig. 2) follows a straight line in the neighbourhood of the origin, but a double-arched curve with a relatively straightforward progress between 20 and 28 p.ct. volatiles.

The Gas Yield Curve showing the cub.m. of gas per ton of coal (see fig. 3) also appears straightforward between 24 and 30 p.ct. of volatiles in the coal. The direction of the curve indicates that it is diminishing to 0 at 0 p.ct. volatiles.

The Calorific Value of the Gas, not benzole-washed (see fig. 4), follows a nearly straight line, falling somewhat as the volatile matter becomes greater. The curve falls rapidly at low percentages of volatiles, and approaches the calorific value of hydrogen and carbon monoxide (2840 cal. per cub.m.). All calorific values are calculated on gas saturated with moisture at 15° C. and 760 mm. Hg.

The Theoretical Yield of Benzole by washing the gas is shown in fig. 5. The function is a straight line approaching 0 at 2·8 p.ct. volatiles—*i.e.,* coals containing this amount of volatiles give no benzole at all.

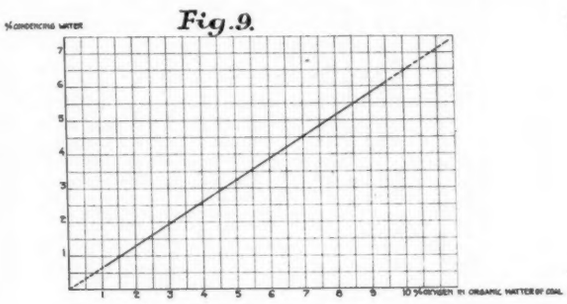
The more complete ultimate analysis of the coal gives us information, among other things, of the following factors: Content of sulphur in coke and hydrogen sulphide in gas (functions of the S in the coal), specific gravity of gas and liquor from dry coal (functions of the O_2 in the coal), composition of gas (the oxygenated gases are functions of the O_2, the hydrogenated ones of the H_2, in the coal). Oxygen and hydrogen are calculated on the organic matter in the coal. Nitrogen is obtained as the remainder. From the analysis of the coal, the calorific value, as well as the specific gravity, of the gas may be calculated. We are able to check the value of these factors by direct determination. The calorific value, calculated from the analysis of the coal, may be compared with the value obtained by calculation from the composition of the gas actually determined. On account of the difficulty of determining the heavy hydrocarbons, these calorific values are as a rule somewhat lower than those obtained by Junkers calorimeter. The calorific values thus obtained are therefore more correct when the coals used are of known oxygen content, than when the values are calculated from a knowledge of the volatiles only.

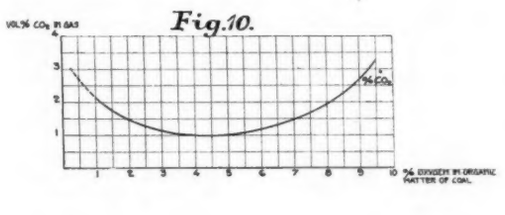
The Content of Sulphur remaining in the Coke is somewhat lower than that in the coal, calculated as a percentage. The function is nearly a straight line, descending to 0 at 0 p.ct. sulphur in the coal (see fig. 6).

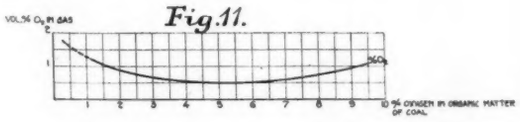
The Content of Hydrogen Sulphide in the Gas is also a straight-line function of the sulphur in the coal, as shown in fig. 7. At a sulphur content of 0·25 p.ct. in the coal, there ought to be no hydrogen sulphide in the gas, according to this diagram—all remaining in the coke.

The Specific Gravity of the Gas in relation to air seems to be a straight-line function of the oxygen content in the coal calculated on organic matter (see fig. 8). At an infinitely low value of the oxygen in the coal, the curve of the specific gravity approaches the figure 0·265, which corresponds to a gas of approximately the following composition—presuming that it consists only of carbon dioxide, oxygen, carbon monoxide, hydrogen, and nitrogen.

	P.Ct.
CO_2 . . . . . =	3·5
O_2 . . . . . =	2·0
CO . . . . . =	10·0
H_2 . . . . . =	80·5
N_2 . . . . . =	4·0
	100·0







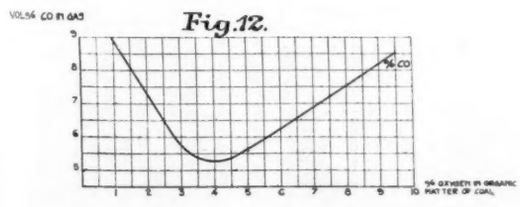
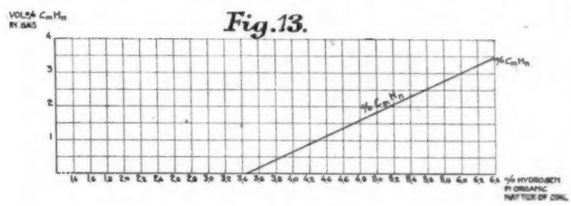
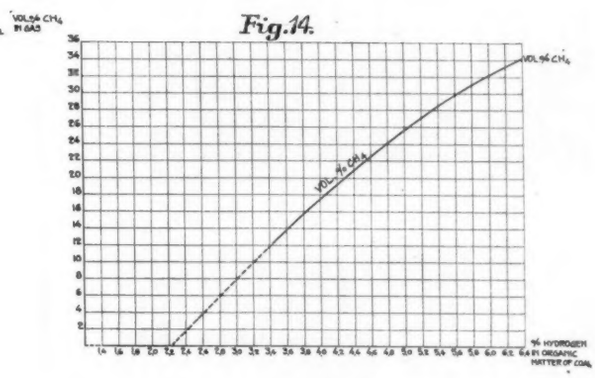


Fig. 9.—Condensing Water of Dry Coal, P.Ct.
Fig. 10.—Carbon Dioxide in the Gas, Vol. P.Ct.
Fig. 11.—Oxygen in the Gas, Vol. P.Ct.
Fig. 12.—Carbon Monoxide in the Gas, Vol. P.Ct.





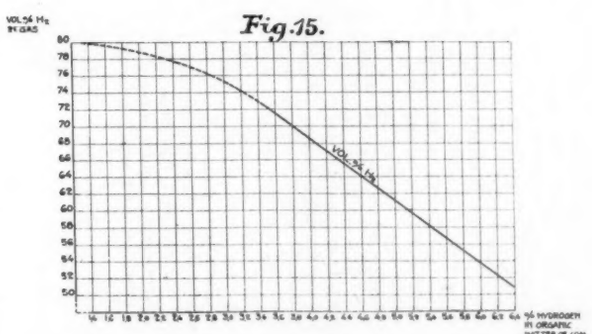


Fig. 13.—Heavy Hydrocarbons in the Gas, Vol. P.Ct.
Fig. 14.—Methane in the Gas, Vol. P.Ct.
Fig. 15.—Hydrogen in the Gas, Vol. P.Ct.

The Condensing Water formed from Dry Coal is an important factor in a gas-works. The strength of the ammoniacal liquor is mainly dependent on this factor. The more condensing water formed, the weaker the liquor. Attempts have been made to prove that the quantity of the condensing water is dependent on the oxygen in the coal—by the German firm Koppers, for example, in their "Mitteilungen." They have not, however, been able to put forward definite proof. Our examination, however, makes it clear that the quantity of the condensing water is dependent on the oxygen content of the coal, and that this function is a straight-line one (see fig. 9). The function becomes 0 at 0 p.ct. oxygen in the coal.

The Composition of the Gas.—Coal gas, as produced by carbonization at 1000° C. and over, consists of the following gases: Carbon dioxide, heavy hydrocarbons, oxygen, carbon monoxide, methane, hydrogen, and nitrogen. Of these, the oxygen and nitrogen are drawn into the retorts by in-leakage of the flue gases; oxygen and nitrogen being unlikely to be liberated from the coal. Here, however, oxygen in the gas has been calculated as a function of the oxygen in the coal, as the content is always inconsiderable (1 p.ct. or less). This curve has a similar appearance to those of carbon dioxide and carbon monoxide. The nitrogen for its part has been estimated by difference. The heavy hydrocarbons include among others benzole and its homologues, ethylene, and small quantities of acetylene and other gases. When calculating the calorific value of the gas from the analysis, the benzole content is calculated according to fig. 5, and the remaining heavy hydrocarbons as ethylene.

The Carbon Dioxide in the Gas seems to form a concave curve with a minimum of 4·5 p.ct. oxygen in the coal (see fig. 10). At infinitely small values of oxygen in the coal, the CO_2 content ought to be about 3·5 p.ct.

The Oxygen in the Gas forms a similar curve, with a minimum at about 0·5 p.ct. of O_2 (see fig. 11). At infinitely small values of oxygen in the coal, the oxygen content of the gas ought to be about 2 p.ct.

The Carbon Monoxide in the Gas forms a hyperbolic curve with a minimum at about 4 p.ct. O_2 (see fig. 12). At infinitely small values of oxygen in the coal, the content of carbon monoxide ought to be about 10 p.ct.

The gases depending on the hydrogen in the coal are the heavy hydrocarbons, the methane, and the free hydrogen. The methane and the hydrogen curves may be said to reflect each other, as a higher hydrogen content means more methane, but less free hydrogen.

The Heavy Hydrocarbons in the Gas (see fig. 13). The function is a straight-line one, and becomes 0 at 3·5 p.ct. of hydrogen in the coal.

The Methane in the Gas (see fig. 14). The curve is slightly bent, like a bow, and the function becomes 0 at about 2·2 p.ct. of hydrogen in the coal. A lower content of hydrogen in the coal thus forms only free hydrogen and no hydrocarbons.

The Hydrogen in the Gas (see fig. 15). The curve is a straight-line one for the ordinary hydrogen content in the coal, but seems to become 80·5 p.ct. of the gas at infinitely small values of hydrogen in the coal.

The Nitrogen in the Gas is, as mentioned above, calculated by difference. The normal nitrogen content in the gas produced in the testing plant is about 4 p.ct.

As already mentioned, all diagrams are obtained empirically. However, in the appended table, to show the good agreement with actual yields, the results obtained by the diagrams are compared with those obtained in the testing plant from typical coals with a volatile content of 4·7 to 33·5 p.ct.

A glance at the table shows that the coke yield differs, at the most, by 4 p.ct. from the real value. The gas yield in cub.m. per ton differs 6 p.ct., the calorific value of the gas 3·5 p.ct., directly calculated, and 12 p.ct. when calculated according to analysis (the error being less when the coals analyzed are rich in oxygen). The specific gravity differs by 7 p.ct. directly calculated, and by 12·5 p.ct. according to analysis. The benzole in the gas differs by 16 p.ct. The remaining factors differ somewhat more, but are of less importance. As a rule one should be able to calculate the yields to within about 5 p.ct.

Comparison between Calculated Figures of Carbonization Products and those obtained in the Testing Plant.

—	Anthracite Breeze. Volatiles 4·7 p.ct. Sulphur 1·03 ,, H = 3·5 p.ct. O = 1·1 p.ct. on Organic Matter.			Westphalian Forge Coal. Volatiles 13·4 p.ct. Sulphur 1·13 ,, H = 4·6 p.ct. O = 2·5 p.ct. on Organic Matter.			American Coking Coal. Volatiles 17·0 p.ct. Sulphur 0·58 ,, H = 4·6 p.ct. O = 3·4 p.ct. on Organic Matter.			Westphalian Coking Coal. Volatiles 22·9 p.ct. Sulphur 1·24 ,, H = 5·1 p.ct. O = 4·2 p.ct. on Organic Matter.			Durham Coking Coal I. Volatiles 25·2 p.ct. Sulphur 0·64 ,, H = 5·2 p.ct. O = 4·9 p.ct. on Organic Matter.			Durham Coking Coal II. Volatiles 27·5 p.ct. Sulphur 0·85 ,, H = 5·2 p.ct. O = 4·9 p.ct. on Organic Matter.			Durham Gas Coal. Volatiles 29·5 p.ct. Sulphur 1·78 ,, H = 5·3 p.ct. O = 4·9 p.ct. on Organic Matter.			Northumberland Steam and Coking Coal. Volatiles 31·0 p.ct. Sulphur 0·64 ,, H = 5·5 p.ct. O = 5·7 p.ct. on Organic Matter.			Yorkshire Gas and Steam Coal. Volatiles 33·6 p.ct. Sulphur 1·36 ,, H = 5·4 p.ct. O = 7·9 p.ct. on Organic Matter.		
	Calculated.	Obtained.	Difference.	Calculated.	Obtained.	Difference.	Calculated.	Obtained.	Difference.	Calculated.	Obtained.	Difference.	Calculated.	Obtained.	Difference.	Calculated.	Obtained.	Difference.	Calculated.	Obtained.	Difference.	Calculated.	Obtained.	Difference.	Calculated.	Obtained	Difference.	Calculated.	tained.	Difference.
Coke yield, p.ct.	89·8	88·4	+1·4	86·0	85·7	+0·3	84·4	84·6	−0·2	80·8	77·6	+3·2	79·0	77·9	+1·1	77·1	76·4	+0·7	75·4	75·3	+0·1	74·0	74·1	−0·1	71·8	71·5	+0·3			
Gas yield, weight p.ct.	3·9	3·8	+0·1	10·0	11·2	−1·2	12·4	11·0	+1·4	13·7	15·0	−1·3	14·0	13·5	+0·5	14·4	14·0	+0·4	15·0	15·1	−0·1	15·6	15·4	+0·2	16·6	17·5	−0·9			
F,, ,, , cub.m. per ton	122	108	+14	262	279	−17	292	290	+2	322	346	−24	329	328	+1	332	320	+12	334	329	+5	338	337	+1	352	338	+14			
Calorific value according to fig. 4, cal. per cub.m.	3510	3440	+70	4150	4000	+150	4370	4405	−35	4700	4875	−175	4820	4760	+60	4930	5020	−90	5010	5120	−110	5070	5110	−40	5170	4990	+180			
Calorific value calculated from analysis, cal. per cub.m.	3410	3330	+80	4240	3790	+450	4240	4490	−250	4605	4725	−120	4625	4785	−160	4705	4840	−135	4755	4990	−235	4895	4760	+135	4915	4870	+45			
Benzole from the gas, grammes per cub.m.	2·4	2·4	±0·0	13·6	11·7	+1·9	18·2	19·8	−1·6	25·8	29·3	−3·5	28·8	28·3	+0·5	31·8	32·6	−0·8	34·4	36·1	−1·7	36·2	..	..	39·4	41·5	−2·1			
Sulphur in the coke, p.ct.	0·83	0·89	−0·06	0·94	0·97	−0·03	0·48	0·58	−0·10	1·03	1·10	−0·07	0·53	0·55	−0·02	0·71	0·83	−0·12	1·48	1·51	−0·03	0·47	0·63	−0·16	1·14	1·33	−0·19			
Hydrogen sulphide in the gas, volume p.ct.	0·55	0·25	+0·30	0·62	0·38	+0·24	0·23	0·44	−0·21	0·69	0·60	+0 09	0·27	0·30	−0·03	0·42	0·42	±0·0	1·07	0·88	+0·19	0·27	0·46	−0·19	0·78	0·84	−0·06			
Specific gravity of the gas in relation to air according to fig. 8	0·281	0·271	+0·010	0·302	0·311	−0·009	0·315	0·294	+0·021	0·327	0·338	−0·011	0·337	0·318	+0·019	0·337	0·338	−0·001	0·337	0·355	−0·018	0·350	0·354	−0·004	0·382	0·401	−0·019			
Specific gravity of the gas in relation to air according to analysis	0·282	0·277	+0·005	0·338	0·334	+0·004	0·316	0·301	+0·015	0·335	0·342	−0·007	0·338	0·320	+0·018	0·343	0·356	−0·013	0·346	0·366	−0·020	0·355	0·357	−0·002	0·358	0·409	−0 051			
Condensing water of dry coal, p.ct.	0·7	..	..	1·6	..	..	2·0	..	..	2·7	2·9	−0·2	3·1	2·5	+1·6	3·1	2·2	+0·9	3·1	3·1	±0·0	3·7	..	..	5·1	4·1	+1·0			
Carbon dioxide in the gas, volume p.ct.	2·0	1·5	+0·5	1·3	1·4	−0·1	1·0	1·2	−0·2	1·0	1·5	−0·5	1·0	0·8	+0·2	1·0	1·0	±0·0	1·0	1·4	−0·4	1·1	0·9	+0·2	1·9	2·0	−0·1			
Heavy hydrocarbons in the gas, ,, ,,	0·0	0·0	±0·0	1·3	0·9	+0·4	1·3	1·4	−0·1	1·9	1·8	+0·1	1·9	2·0	−0·1	2·0	2·3	−0·3	2·1	3·0	−0·9	2·4	2·5	−0·1	2·3	3·0	−0·7			
Oxygen in the gas, ,, ,,	1·2	0·8	+0·4	0·7	0·9	−0·2	0·6	0·5	+0·1	0·5	0·8	−0·3	0·5	0·7	−0·2	0·5	1·0	−0·5	0·5	0·5	±0·0	0·5	0·5	±0·0	0·7	0·8	−0·1			
Carbon monoxide in the gas, ,, ,,	8·8	7·0	+1·8	6·5	8·4	−1·9	5·4	5·1	+0·3	5·3	5·3	±0·0	5·5	4·0	+1·5	5·5	4·9	+0·6	5·5	5·7	−0·2	6·0	6·2	−0·2	7·5	8·5	−1·0			
Methane in the gas, ,, ,,	12·4	12·0	+0·4	22·4	17·2	+5·2	22·4	23·9	−1·5	26·2	27·8	−1·6	26·2	27·7	−1·5	27·0	29 0	−2·0	27·6	29·6	−2·0	29·0	27·0	+2·0	28·4	28·6	−0·2			
Hydrogen in the gas, ,, ,,	72·2	72·6	−0·4	64·0	64·9	−0·9	64·0	64·9	−0·9	60·4	59 5	+0·9	60·4	61·6	−1·2	59·6	57·3	+2·3	59·0	56·2	+2·8	57·4	58·2	−0·8	58·2	52·6	+5·6			
Nitrogen in the gas, ,, ,,	3·4	6·1	−2·7	3·8	6·3	−2·5	5·3	3·0	+2·3	4·7	3·3	+1·4	4·5	3·2	+1·3	4 4	4·5	−0·1	4·3	3·6	+0·7	3·6	4·7	−1 1	1·0	4·5	−3·5			

GAS UNDERTAKINGS RETURN FOR 1925.

Figures Appearing in Part I.

THE first section of the Board of Trade Return relating to all Authorized Gas Undertakings in Great Britain for the year 1925, was issued recently by H.M. Stationery Office, Adastral House, Kingsway, London, W.C. 2, and Branches, at the price of 5s. net. Part I. is that which contains particulars relating to the manufacture and supply of gas.

For the year 1924, Part I. dealt with 784 undertakings. Six undertakings have, since the issue of that return, been absorbed by others—namely, the Chester-le-Street and Walker and Wallsend undertakings, absorbed by the Newcastle-upon-Tyne and Gateshead Gas Company; the Compstall undertaking, absorbed by the Marple Urban District Council; the Fareham undertaking, absorbed by the Gosport District Gas Company; the Godstone undertaking, absorbed by the Redhill Gas Company; and the Sutton and Hooton undertaking, absorbed by the Ellesmere Port and Whitby Urban District Council. Three new undertakings have been added to the return—the Biggleswade and District Gas Company, Ltd., the East Kent Gas Company, Ltd., and the Helston Corporation. The last-named undertaking was acquired during the year from a non-statutory gas company. The undertaking of the Hoylake and West Kirby Gas and Water Company was acquired during 1925 by the Hoylake and West Kirby Urban District Council. The total number of undertakings shown in the present return is thus 781.

The particulars are for the calendar year 1925 in the case of England and Wales, and for the twelve months ended May 15, 1925, in the case of Scotland. As on the last occasion, individual quantities of gas made and sold are shown both in cubic feet and therms, if the undertaking was authorized during any part of the year to charge for heat units supplied; but it will be noted from the comparative table that the number of therms made and sold by all undertakings cannot be given. The number of therms made is based on the average calorific value supplied as officially ascertained; but in cases where no test has been made the figure shown is based either on the average calorific value supplied as stated by the undertaking or on the declared calorific value. The number of therms sold is in all cases based on the declared calorific value.

WHAT THE FIGURES SHOW.

The comparative table shows that the quantity of coal carbonized in 1925 by the authorized gas undertakings of Great Britain was 17,031,172 tons, of coke employed for the manufacture of water gas 1,153,413 tons, and of oil used 61,382,649 gallons. The quantity of coal gas made was 231,347,681,000 c.ft., and of water gas 48,173,291,000 c.ft. The total quantity made (including 4,297,336,000 c.ft. of "other gas") was 283,818,308,000 c.ft. The gas sold totalled 265,757,353,000 c.ft., divided up as follows: Prepayment consumers, 92,747,287,000 c.ft.; ordinary and power consumers, 163,059,081,000 c.ft.; and public lamps, 9,950,985,000 c.ft. The residuals made were: Coke and breeze, 11,398,382 tons; tar, 194,168,304 gallons; and sulphate of ammonia, 125,874½ tons. The prepayment consumers numbered 4,446,618, and the ordinary consumers 3,753,837. The total mileage of mains was 43,178.

GAS SALES STILL INCREASING.

The table enables these figures to be compared with those of the five immediately preceding years; and looking at the statistics for 1925 and 1924, it will be noticed that the quantity of gas made during 1925 was 8,592,469,000 c.ft. (3·1 p.ct.) in excess of that in 1924. A slight decrease (538,355,000 c.ft., or 0·2 p.ct.) occurred in the quantity of coal gas made; but the water gas increased by 8,905,071,000 c.ft., or 22·7 p.ct. The coal carbonized was less than in 1924 by 298,008 tons; but 177,047 tons more of coke and 15,922,049 gallons more of oil were used in the manufacture of water gas. The coke and breeze made in 1925 was less than in 1924 by 259,083 tons; and the tar made was less by 1,088,974 gallons. The quantity of gas sold increased by 8,865,431,000 c.ft., or 3·5 p.ct. The number of consumers increased by 206,669.

SEPARATING THE FIGURES.

There are given in the comparative table the totals for the whole of the authorized gas undertakings for the six years 1920 to 1925. The separate figures for England and Wales and Scotland for the last three years are as follows:

1925.

England and Wales.—Coal carbonized, 15,483,446 tons; coke for water gas, 1,119,452 tons; oil used, 61,217,483 gallons. Coal gas made, 210,156,509,000 c.ft.; water gas, 46,646,040,000 c.ft.; total gas made, 261,099,797 c.ft. Sold to prepayment consumers, 86,501,296,000 c.ft.; to ordinary and power consumers, &c., 149,774,319,000 c.ft.; for public lamps, 8,839,808,000 c.ft.; total quantity sold, 245,115,423,000 c.ft. Coke and breeze made, 10,459,165 tons; tar, 171,777,349 gallons; sulphate of ammonia, 109,243¼ tons. Number of prepayment consumers, 4,136,354; ordinary consumers, 3,264,355; total number of consumers, 7,400,709. Length of gas mains, 39,677¾ miles.

Scotland.—Coal carbonized, 1,547,726 tons; coke for water gas, 33,961 tons; oil used, 165,166 gallons. Coal gas made, 21,191,172,000 c.ft.; water gas, 1,527,251,000 c.ft.; total gas made, 22,718,511,000 c.ft. Sold to prepayment consumers, 6,245,991,000 c.ft.; to ordinary and power consumers, &c., 13,284,762,000 c.ft.; for public lamps, 1,111,177,000 c.ft.; total quantity sold, 20,641,930,000 c.ft. Coke and breeze made, 939,217 tons; tar, 22,390,955 gallons; sulphate of ammonia, 16,631¼ tons. Number of prepayment consumers, 310,264; ordinary consumers, 489,482; total number of consumers, 799,746. Length of gas mains, 3500¼ miles.

1924.

England and Wales.—Coal carbonized, 15,770,012 tons; coke for water gas, 947,189 tons; oil used, 45,242,865 gallons. Coal gas made, 211,084,643,000 c.ft.; water gas, 37,918,918,000 c.ft.; total gas made, 253,075,066,000 c.ft. Sold to prepayment consumers, 82,879,003,000 c.ft.; to ordinary and power consumers, &c., 145,430,758,000 c.ft.; for public lamps, 8,522,271,000 c.ft.; total quantity sold, 236,832,032,000 c.ft.

COMPARATIVE TABLE.

Year.	Number of Authorized Undertakings Included in Return.	Materials Used in Manufacture of Gas.			Quantity of Gas Made.			
		Coal Carbonized.	Coke for Water Gas.	Oil.	Coal Gas.	Water Gas.	Total Made.	
		Tons.	Tons.	Gallons.	1000 C.Ft.	1000 C.Ft.	1000 C.Ft.	Therms.
1920	798	17,566,316	‡	‡	214,703,118	36,932,530	*256,977,744	‡
1921	797	15,775,696	1,254,122	51,731,492	194,518,147	49,894,716	*249,019,732	§
1922	796	15,907,095	1,057,909	46,145,160	201,963,546	43,946,129	*252,070,321	§
1923	790	16,460,632	906,717	42,751,644	217,756,730	38,347,643	*259,849,536	§
1924	784	17,329,180	976,366	45,460,609	231,886,036	39,268,220	*275,225,839	§
1925	781	17,031,172	1,153,413	61,382,649	231,347,681	48,173,291	*283,818,308	§

Year.	Quantity of Gas Sold.					Quantity of Residuals Made.			Number of Consumers.		Length of Mains.
	To Prepayment Consumers.	To Ordinary and Power Consumers, &c.	For Public Lamps.	Total Sold.		Coke and Breeze.	Tar.	Sulphate of Ammonia.	Prepayment.	Ordinary.	
	1000 C.Ft.	1000 C.Ft.	1000 C.Ft.	1000 C.Ft.	Therms.	Tons.	Gallons.	Tons.			Miles.
1920	77,911,168	150,562,911	6,928,745	235,402,824	‡	‡	‡	‡	4,030,647	3,417,685	38,847
1921	80,285,658	141,768,032	7,023,422	229,077,112	§	10,404,702	160,376,472	115,979	4,071,220	3,488,090	39,547¾
1922	78,224,063	146,174,788	8,203,938	232,602,789	§	10,475,155	169,770,531	113,373	4,137,009	3,535,137	40,231¼
1923	82,404,187	150,256,712	8,965,704	241,626,603	§	11,098,169	181,962,574	117,166	4,231,243	3,579,107	40,984½
1924	88,539,752	158,748,918	9,603,252	256,891,922	§	11,657,465	195,257,278	124,737	4,340,583	3,653,203	41,985
1925	92,747,287	163,059,081	9,950,985	265,757,353	§	11,398,382	194,168,304	125,874½	4,446,618	3,753,837	43,178

* Including "Other gas," in 1920, 5,342,096,000 c.ft.; 1921, 4,606,869,000 c.ft.; 1922, 6,160,646,000 c.ft.; 1923, 3,745,163,000 c.ft.; 1924, 4,071,583,000 c.ft.; and 1925, 4,297,336,000 c.ft. § The number of therms made and sold by all undertakings cannot be given. ‡ Information not available.

Coke and breeze made, 10,699,716 tons; tar, 172,805,085 gallons; sulphate of ammonia, 108,436½ tons. Number of prepayment consumers, 4,036,251; ordinary consumers, 3,161,325; total number of consumers, 7,197,576. Length of gas mains, 38,548½ miles.

Scotland.—Coal carbonized, 1,559,168 tons; coke for water gas, 29,177 tons; oil used, 217,744 gallons. Coke gas made, 20,801,393,000 c.ft.; water gas, 1,349,302,000 c.ft.; total gas made, 22,150,773,000 c.ft. Sold to prepayment consumers, 5,660,749,000 c.ft.; to ordinary and power consumers, &c., 13,318,160,000 c.ft.; for public lamps, 1,080,981,000 c.ft.; total quantity sold, 20,059,890,000 c.ft. Coke and breeze made, 957,749 tons; tar, 22,452,193 gallons; sulphate of ammonia, 16,300½ tons. Number of prepayment consumers, 304,332; ordinary consumers, 491,878; total number of consumers, 796,210. Length of gas mains, 3436½ miles.

1923.

England and Wales.—Coal carbonized, 14,939,033 tons; coke for water gas, 876,103 tons; oil used, 42,507,755 gallons. Coal gas made, 197,918,057,000 c.ft.; water gas, 36,955,050,000 c.ft.; total gas made, 238,624,961,000 c.ft. Sold to prepayment consumers, 76,985,854,000 c.ft.; to ordinary and power consumers, &c., 137,553,792,000 c.ft.; for public lamps, 8,048,186,000 c.ft.; total quantity sold, 222,587,832,000 c.ft. Coke and breeze made, 10,148,985 tons; tar, 162,160,390 gallons; sulphate of ammonia, 102,268 tons. Number of prepayment consumers, 3,936,729; ordinary consumers, 3,088,459; total number of consumers, 7,025,188. Length of gas mains, 37,607¾ miles.

Scotland.—Coal carbonized, 1,521,599 tons; coke for water gas, 30,614 tons; oil used, 243,889 gallons. Coal gas made, 19,806,088,000 c.ft.; water gas, 1,392,593,000 c.ft.; total gas made, 21,224,575,000 c.ft. Sold to prepayment consumers, 5,418,333,000 c.ft.; to ordinary and power consumers, &c., 12,702,920,000 c.ft.; for public lamps, 917,518,000 c.ft.; total quantity sold, 19,038,771,000 c.ft. Coke and breeze made, 949,184 tons; tar, 19,802,184 gallons; sulphate of ammonia, 14,898 tons. Number of prepayment consumers, 294,514; ordinary consumers, 490,648; total number of consumers, 785,162. Length of gas mains, 3376½ miles.

Companies and Local Authorities.

In the return for 1925, the undertakings in the hands of companies and of local authorities are divided thus:

England and Wales.—461 companies; 247 local authorities.

Scotland.—4 companies; 69 local authorities.

Declarations of Calorific Value.

The first column of figures is devoted to the declared and the average (when the latter has been officially ascertained) calorific values of gas supplied. When noticing the returns for the four preceding years, lists were given of the following numbers of undertakings which had made declarations of calorific value; 1921, 184 undertakings; 1922, 162 undertakings; 1923, 134 undertakings; and 1924, 49 undertakings. To these may now be added the undertakings mentioned below, with their declarations in B.Th.U. made in 1925:

Biggleswade, 475
Brierley Hill, 450
East Kent Gas Company, 400
Ellesmere Port, 425
Great Driffield, 500
Guisborough, 500
Haverfordwest, 420
Hindley, 475
Monmouth, 500
Mossley, 500
Nuneaton, 280
Penryn, 500
Portland, 475
Stretford, 500
Wirksworth, 500
Aberdeen, 500
Airdrie, 425
Alloa, 440
Bellshill and Mossend, 400
Bothwell and Uddingston, 400
Bridge of Allan, 500
Cambuslang, 400
Cleland and Omoa, 400
Denny and Dunipace, 550
Dumfries, 500
Dundee, 450
Dunfermline, 430
Dunoon, 450
Falkirk, 430
Glasgow, 470
Grangemouth, 500
Holytown, &c., 400
Inverness, 500
Kirkintilloch, 450
Larkhall, 400
Motherwell and Wishaw, 400
Newarthill, 400
Peebles, 520
Perth, 450
Renfrew, 450
Stonehouse, 400
Troon, 450

In 1925 there were a smaller number of instances than in 1924 of undertakings making alterations in the calorific values that had been previously declared by them. The following details show that such changes as were made were about equally divided between the upward and the downward directions.

Aldershot Gas, &c., Company—from 500 to 525 B.Th.U.
Annfield Plain and District Gas Company—from 475 to 425 B.Th.U.
Gravesend and Milton Gas Company—from 450 to 475 B.Th.U.
Heathfield and Waldron Gas Company—from 490 to 450 B.Th.U.
Hessle Gas Company—from 475 to 500 B.Th.U.
Highbridge Gas Company—from 450 to 500 B.Th.U.
Houghton-le-Spring Gas Company—from 520 to 480 B.Th.U.
Lytham St. Annes Corporation—from 500 and 430 to 525 B.Th.U.
Market Drayton Gas Company—from 550 to 520 B.Th.U.
Newcastle-upon-Tyne and Gateshead Gas Company—
Newcastle area—from 475 to 500 B.Th.U.
Walker area—from 525 to 500 B.Th.U.
Scunthorpe and Frodingham U.D.C.—from 375 to 425 B.Th.U.
Settle Gas Company—from 530 to 500 B.Th.U.
Sittingbourne Gas Company—from 500 to 475 B.Th.U.
Sutton Gas Company—from 480 to 500 B.Th.U.
Swindon Gas Company—from 400 to 425 B.Th.U.
Whitwell Gas Company—from 500 to 475 B.Th.U.

Water Gas Supplied.

There is set out in the second column of the return the proportion of water gas supplied by various undertakings; the maximum and average figures being given. The following cases (with their percentages) are noted in which the maximum proportion of water gas supplied in the gas reached 25 p.ct.

Aberystwyth, max., 28; av., 18·2.
Abingdon, max., 38; av., 28.
Ackworth, &c., max., 30; av., 25.
Ashford, max., 36·2; av., 14·2.
Bangor, max., 25; av., 20.
Barnet, max., 39; av., 20·4.
Barnsley, max., 27·5; av., 15·8.
Barry, max., 50; av., 25.
Bath, max., 54·6; av., 36·5.
Bexhill, max., 36·1; av., 14.
Birkenhead, max., 56; av., 27·2.
Birmingham, max., 27; av., 10·2.
Bishop Auckland, max., 33; av., 10.
Bishop's Stortford, max., 58·2*; av., 36·1.*
Blackpool, max., 33·3; av., 19·7.
Blaenavon, max., 40; av., 33·5.
Bournemouth, max., 39·5; av., 34·9.
Brentford, max., 45·3; av., 38·9.
Bridlington, max., 51·1; av., 33·8.
Brierley Hill, max., 51; av., 42.
Brighton and Hove, max., 45·2; av., 37·8.
Bristol, max., 41·97; av., 28·21.
Budleigh Salterton, max., 25; av., 18.
Burnham (Somerset), max., 25; av., 15·1.
Burnley, max., 40·2; av., 31·8.
Cambridge, max., 33·3; av., 32.
Cardiff, max., 34·5; av., 22·7.
Carnarvon, max., 30; av., 25.
Chelmsford, max., 25·2; av., 13·8.
Chesham, max., 38; av., 26.
Chichester, max., 49·8; av., 29·8.
Chorley, max., 31·8; av., 12·8.
Cirencester, max., 35; av., 30.
Clacton, max., 34; av., 20.
Cleator Moor, max., 43·9; av., 29·5.
Cleveland, max., 30; av., 18.
Colchester, max., 40·8; av., 25.
Colwyn Bay, max., 35; av., 29.
Commercial Gas Company, max., 28·5; av., 19·2.
Conway, max., 30; av., 25.
Coventry, max., 25·2; av., 14·4.
Crowborough, max., 55; av., 32·9.
Croydon, max., 39·7; av., 32·3.
Deal and Walmer, max., 50·2; av., 34·6.
Derby, max., 26·9; av., 18·9.
Doncaster, max., 41·6; av., 37·8.
Dorchester, max., 30; av., 19.
Dorking, max., 32·1; av., 16·9.
Dover, max., 29·7; av., 24·4.
Drighlington, max., 95·3; av., 4·7.
Dudley, max., 40·8; av., 11·6.
East Dereham, max., 33; av., 24.
East Grinstead, max., 39·3; av., 27·25.
East Hull, max., 40; av., 28·5.
Eastbourne, max., 30; av., 20·4.
Falmouth, max., 26·4; av., 12·7.
Felixstowe, max., 40·5; av., 22·5.
Fleetwood, max., 40; av., 30·1.
Gas Light and Coke Company, max., 34; av., 31.
Gloucester, max., 39·3; av., 26·2.
Gorleston and Southtown, max., 25; av., 17.
Gosport, max., 61·7; av., 44·4.
Gravesend and Milton, max., 51·9; av., 24·7.
Grays and Tilbury, max., 39; av., 19.
Guildford, max., 36; av., 24.
Hampton Court, max., 39·9; av., 32.
Harpenden, max., 40; av., 27.
Harrogate, max., 39; av., 28.
Hartlepool, max., 57·8; av., 38.
Harwich, max., 27; av., 24.
Haslemere, max., 37; av., 24.
Haslingden, max., 25; av., 10.
Hastings and St. Leonards, max., 45·8; av., 34·1.
Hebden Bridge and Mytholmroyd, max., 29·3; av., 6·4.
Hemel Hempsted, max., 35·2; av., 28·2.
Hereford, max., 68·2; av., 32·3.
Hertford, max., 30; av., 19·75.
Hessle, max., 40; av., 22·9.
Hexham, max., 40; av., 30.
Hoddesdon, max., 25; av., 15.
Hornsey, max., 52; av., 40.
Hull (British Gas Light), max., 43; av., 29·1.
Ipswich, max., 28; av., 25·3.
Irthlingborough, max., 49·2; av., 47·25.
Kendal, max., 30; av., 20.
Kettering, max., 29·9; av., 28·8.
Kidderminster, max., 30; av., 20.
King's Lynn, max., 41·4; av., 25·4.
Kingston-upon-Thames, max., 48; av., 27.
Lea Bridge, max., 50·8; av., 45·3.
Leamington, max., 28; av., 10·4.
Leeds, max., 31·3; av., 16·8.
Leighton Buzzard, max., 26; av., 8.
Lewes, max., 31; av., 14·2.
Lincoln, max., 33·3; av., 18·7.
Liverpool, max., 45; av., 36·2.
Llandudno, max., 30; av., 30.
Llanelly, max., 69·8; av., 58·5.
Llynvi Valley, max., 35; av., 25.
Loughborough, max., 28; av., 25.
Lowestoft, max., 38; av., 28.
Lymm, max., 35; av., 30.
Macclesfield, max., 30; av., not stated.
Maidstone, max., 42; av., 26·2.
Malton, max., 30·3; av., 10·6.
Mansfield, max., 31·5; av., 16·9.
Merthyr Tydfil, max., 28·2; av., 20·2.
Mid-Kent Gas Light Company, max., 43·5; av., 28·3.
Morecambe, max., 97·8; av., 7.
Newport (Mon.), max., 45·7; av., 34·2.
Normanton, max., 33; av., 23.
North Middlesex Gas Company, max., 64·8; av., 48·1.
Norwich (British Gas Light), max., 28·3; av., 13·75.
Peterborough, max., 27·2; av., 22·3.
Pinner, max., 40; av., 31·7.
Plymouth Corporation, max., 60·6; av., 46·8.
Plymouth and Stonehouse Gas Company, max., 61; av., 51·1.
Pontefract, max., 33; av., 26.
Porthcawl, max., 30; av., 28.
Portsea Island Gas Light Company, max., 50·9; av., 35·9.
Preston, max., 46; av., 32.
Ramsgate, max., 50·2; av., 13·1.
Reading, max., 52·7; av., 36·3.
Redhill, max., 59·2; av., 39·9.
Rhyl, max., 35; av., 22.
Rochdale, max., 29·4; av., 22·7.
Rochester, Chatham, &c., max., 40; av., 32·1.
Romford, max., 52·1; av., 27·6.
Rugby, max., 47·2; av., 33·9.
Rushden and Higham Ferrers, max., 45·2; av., 26·3.
St. Albans, max., 44; av., 27.
Scarborough, max., 60; av., 51.
Seaham, max., 33·5; av., 18·9.
Selby, max., 33; av., 23.
Sevenoaks, max., 30; av., 20.
Sheppy Gas Company, max., 32; av., 25.
Sheringham, max., 25; av., 20.
Smethwick, max., 30; av., 5·7.
Southampton, max., 63·5; av., 42·1.
Southend, max., 50; av., 49.
Southgate, max., 67·7; av., 48·8.
Southport, max., 36·8; av., 17·3.
South Suburban Gas Company, max., 31·7; av., 24.
Spalding, max., 39·5; av., 22·9.
Spennymoor and Tudhoe, max., 25; av., 12.
Stafford, max., 25; av., 25.
Stockport, max., 50; av., 18.
Stoke-on-Trent, max., 36·6; av., 16·9.
Sunderland, max., 25; av., 20.
Swansea, max., 40·7; av., 38·1.
Swinton and Mexborough, max., 40; av., 25.
Taunton, max., 40; av., 18·5.
Teignmouth, max., 40; av., 40.
Tendring Hundred Company (Walton-on-Naze), max., 25; av., 20·6.
Thirsk, max., 33·3; av., 33·3.
Tonbridge, max., 66; av., 64.
Torquay and Paignton, max., 63·8; av., 41·8.
Tottenham, max., 56; av., 34.
Tunbridge Wells, max., 44; av., 39·1.
Tynemouth, max., 33·3; av., 12·5.
Uxbridge, Maidenhead, and Wycombe Gas Company (Maidenhead area only), max., 62; av., 49·9.
Wakefield, max., 28·4; av., 16·3.
Walsall, max., 26·3; av., 11·5.
Waltham and Cheshunt, max., 47; av., 35.
Wandsworth, Wimbledon, and Epsom Gas Company, max., 27·2; av., 14·9.
Ware, max., 56·75; av., 38·5.
Wellingborough, max., 60; av., 52.
Wells, max., 29; av., 14·9.

* One station only out of four.

Westgate and Birchington, max., 48·6; av., 37·4.
Weston-super-Mare, max., 50·2; av., 30·7.
Weymouth, max., 48; av., 25.
Willenhall, max., 30·4; av., 3·1.
Winchester, max., 50; av., 40.
Woking, max., 37·2; av., 16·6.
Wokingham, max., 30; av., 27·5.
Wolverhampton, max., 39·1; av., 26·5.
Woolton, max., 27; av., 14.
Worthing, max., 33; av., 13·1.
Yeadon and Guiseley, max., 32; av., 29.
Yeovil, max., 50; av., 27·6.
York, max., 45·4; av., 12·4.
Airdrie, max., 45; av., 30.
Burntisland, max., 30; av., 30.
Edinburgh, max., 32·4; av., 21·9.
Kilmarnock, max., 40; av., 35.
Kirkintilloch, max., 45; av., 40.
Newport (N.B.), max., 36·9; av., 33·1.
Stirling, max., 48; av., 41·6.
Tayport, max., 33·3; av., 10.

OTHER GAS.

Of the 4,297,336,000 c.ft. of "other gas" made by the authorized undertakings in 1925—that is, other than the separate proportions of coal gas and water gas set out in the comparative table, some was Tully gas, some carburetted hydrogen, &c. The output of Mond gas by the South Staffordshire Mond Gas Company was 2,929,929,000 c.ft., which was practically 7,000,000 c.ft. more than in 1924.

GAS IN BULK.

Tables are included which show the gas sold in bulk to authorized gas undertakings by other undertakings, and that similarly bought by undertakings. The figures are included only once in the return—*i.e.*, as made by the selling undertaking, and as sold to consumers by the purchasing undertaking. The gas so sold amounted to 869,299,000 c.ft.; while the purchases totalled 897,647,000 c.ft. The biggest figures in these tables are:

Gas Sold to Authorized Undertakings.

Selling Undertaking.	C.Ft.
Gas Light and Coke Company	300,062,000
Hull (British Gas Light Company, Ltd.)	70,642,000
Otley Gas Company	21,240,000
Rhymney and Aber Gas Company	56,053,000
Watford Gas and Coke Company	81,202,000
Windsor Royal Gaslight Company	23,263,000
Bothwell and Uddingston Undertaking (Lanark County Council)	209,959,000

Gas Bought by Authorized Undertakings.

Purchasing Undertaking.	C.Ft.
Bedwellty U.D.C.	56,053,000
Brentford Gas Company	300,062,000
Burley-in-Wharfedale U.D.C.	20,661,000
Hull Corporation	70,642,000
Mynyddislwyn U.D.C.	24,629,000
Rickmansworth U.D.C.	62,072,000
Uxbridge, Maidenhead, Wycombe, and District Gas Company	51,372,000
Bellshill and Mossend Undertaking (Lanark County Council)	78,640,000
Holytown, New Stevenston, and Carfin Undertaking (Lanark County Council)	35,291,000
Larkhill Undertaking (Lanark County Council)	74,927,000

COKE-OVEN GAS SUPPLIES.

The total quantity of gas bought from owners of coke ovens by authorized gas undertakings shows another step forward on the present occasion. This gas appears in the return as sold to consumers by those undertakings. The following are the figures contained in the table:

Purchasing Undertaking.	Quantity of Gas Involved.
	C.Ft.
Castleford and Whitwood Gas Light and Coke Company.	22,000,000
Chesterfield Corporation	133,049,000
Dinnington and District Gas Company, Ltd.	42,545,000
Eckington and Mosborough Gas Company, Ltd.	38,000,000
Houghton-le-Spring District Gas Company.	21,433,000
Kidsgrove Gas Light Company	54,308,000
Leeds Corporation	401,668,000
Little Hulton U.D.C.	19,551,000
Manchester Corporation	7,139,000
Middlesbrough Corporation	916,640,000
Ossett Corporation	158,853,000
Pontypridd U.D.C.	145,133,000
Port Talbot Corporation	92,380,000
Rhymney and Aber Gas Company	293,661,000
Rotherham Corporation.	240,710,000
Sheffield Gas Company	1,849,299,000
Staveley Gas Light and Coke Company, Ltd.	17,429,000
Stocksbridge Gas Company	47,799,000
Swinton and Mexborough Gas Board.	77,763,000
Wath, Bolton, and Thurnscoe Gas Board	132,892,000
Wombwell U.D.C.	86,000,000
Total	4,797,752,000

The total compares with a figure of 4,470,914,000 c.ft. of coke-oven gas purchased by gas undertakings in the same way in 1924, 4,268,055,000 c.ft. in 1923, 3,635,678,000 c.ft. in 1922, and 1,325,027,000 c.ft. in 1921. There are on the present occasion three names added to the 1924 list—the Castleford and Whitwood Gas Light and Coke Company, the Houghton-le-Spring District Gas Company, and the Manchester Corporation.

NATIONAL COAL PRODUCTS, CHEMICAL, AND ENGINEERING EXHIBITION.

To be Held in Manchester.

An important exhibition connected with the above will be held in Manchester from Nov. 16 to 27. It is expected that this exhibition will be representative of all aspects of the coal producing and using industries—of the mining, gas, coking, and other industries. It is being organized by the Society of Chemical Industry, and will take place in the City Hall.

In conjunction with the exhibition, a Tar Conference is being organized by a Joint Committee representative of the Institution of Gas Engineers, the Fuel Section of the Society of Chemical Industry, and the Coke Oven Managers' Association. The Secretaries to the Committee are Dr. E. W. Smith and Mr. H. Talbot; and communications in connection with the conference should be addressed to them at 48, Grosvenor Gardens.

The conference will include a number of papers and notes on the various aspects of the tar problem; and the following gentlemen will present papers or notes:

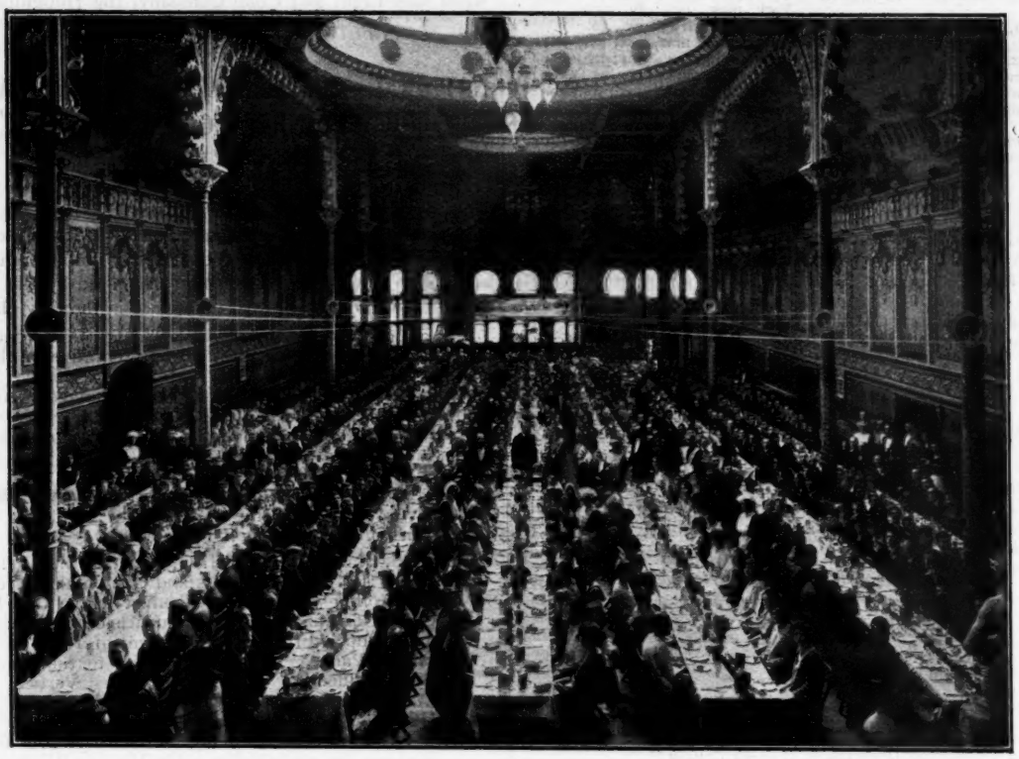
Mr. F. S. Sinnatt and Mr. J. G. King, of the Fuel Research Board: "A Study of Tars and Oils obtained from Coal."
Mr. H. Hollings, Chief Gas Chemist to the Gas Light and Coke Company: "The Influence of Carbonizing Conditions upon Free Carbon Content of Tar."
Dr. Albert Parker, Research Chemist to the Institution of Gas Engineers: "Tar from Steamed Vertical Retorts."
Mr. A. C. Tait, of the Templetown Tar Works, Consett, Durham: "Coal Tar Disinfectants."
Mr. W. Gordon Adam, Manager of the Bye-Product Works, Beckton, in consultation with Mr. H. W. Robinson, of the Midland Tar Distillers, Ltd., representing the British Road Board Association: "Tar from the point of view of the Highway Authority."
Mr. J. McLeod, Manager of the Bye-Product Works, Glasgow: Notes on "Vertical Retort Tar."
Mr. W. Gordon Adam: "A Plea for Standardization of Analytical Methods in Coal Tar Products Specifications."
Mr. G. F. H. Polglaze, of the South Western Tar Distillers, Stamshaw Chemical Works, Portsmouth: "The Testing of Road Tars."
Mr. H. M. Spiers, Senior Chemist to the Woodall-Duckham Companies: "The Viscosity of Tar."
Mr. H. F. Taylor, of Messrs. Hardman & Holden, Manchester: "Pitch."

The symposium will take place in the Manchester College of Technology on Nov. 26, and those present will be welcomed at 10 a.m. by the Manchester Authorities. The papers will be commenced at 10.30 under the Chairmanship of Prof. A. Smithells, F.R.S., Chairman of the Fuel Section of the Society of Chemical Industry, and will continue till 12.30. In the afternoon the papers will continue from 2 till 4, under the Chairmanship of Alderman Thomas Glover, J.P., Gas Engineer, of Norwich. The evening session will extend from 5 till 7, under the Chairmanship of Mr. E. Escott Wood, President of the Coke Oven Managers' Association. In the evening there will be a simple meal for those attending the symposium.

It is anticipated that all papers will be printed and ready for distribution fourteen days before the date of the conference. Full particulars and circulars will be sent to all members of the constituent Institutions, and all interested will be welcomed at the conference and exhibition. Works visits will be arranged for the day prior to the conference. Full particulars can be obtained from the Secretaries. When the detailed programme has reached completion, this will be sent to all members and others interested in the conference and exhibition.

Early Industrial Uses of Gas.—According to a report made by research engineers of the American Gas Association, it was as long ago as 1806 that Josiah Pemberton constructed a gas stove, using it for soldering purposes in his button factory. In 1840 a Scotch manufacturer named Mackintosh made several tons of "cemented" steel by submitting iron at a dull red heat to the action of lighting gas. The carbon for the steel was derived from the gas. In 1857 a patent was granted for the heating of irons for laundry work by means of gas; and in 1859 a soldering apparatus for continuous soldering by means of gas was described in the Technical Press. This included the use of a blast worked by a foot bellows. In an advertisement of Eisner, of Berlin, in July, 1859, it was pointed out that there was scarcely a brand of domestic work, of industry, or of business for which a gas cooking or heating apparatus could not be recommended.

CENTENARY OF THE CANNON IRON FOUNDRIES, LTD.



THE CANNON IRON FOUNDRIES CELEBRATE THEIR CENTENARY.

This photograph was taken in the Indian Lounge of the Winter Gardens, Blackpool, where the Cannon Iron Foundries entertained at dinner over 900 of their staff and employees, in connection with their Centenary Celebrations.

On Saturday, Sept. 18, the Cannon Iron Foundries, Ltd., celebrated their centenary; and to mark the event, they entertained at Blackpool over 900 of their staff and employees. A hundred years ago Deepfields, where the present factory of the firm is situated, was a village known only to the inhabitants of the country immediately surrounding it. To-day its reputation has spread to every quarter of the globe, for Cannon products are in use throughout the civilized and uncivilized parts of the world.

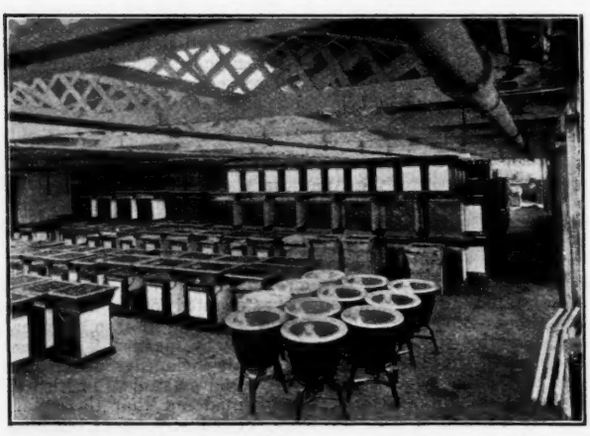
Originally the firm was known as Edward and Stephen Sheldon, and the foundry covered barely more than half-an-acre of land and employed only fifteen or twenty people. The area of the present premises is no less than 20 acres, and the number employed about 1000.

The mainstay of the business in its earliest days was domestic hollow-ware. This business is still an important section of the firm's activities, but there have been added from time to time "Porceliron" sanitary ware, grindstones, chemical ware, and last—but perhaps the most important of all—gas cooking and heating stoves.

Gas Stove Department.

The late Alderman Richard Clayton, J.P., showing considerable business acumen, made preparations in 1895 for the complete manufacture of gas cooking and heating stoves; and in that same year the first Cannon cooker was produced and dispatched. It is doubtful whether Richard Clayton himself realized the full extent to which these small beginnings would eventually expand. But expand they did; and to-day, from a floor space in 1895 of only 300 square yards, this particular department has in the comparatively short time of thirty-one years so developed as to occupy an area of no less than twelve acres. With the discoveries and improvements in the utilization of gas for domestic and other purposes—not a few of which improvements have originated within the Cannon walls—it was only natural that the Company's products should increase in variety as well as in number; and in addition to cooking and heating stoves, the output of this department includes gas cooking ranges, ovens, carving tables, and hot closets for hotels, schools, and institutions; breakfast grillers, hotplates, burners, boiling rings, tailors' heaters, laundry and domestic gas irons, washing boilers, and bathroom geysers. In addition, many models of water circulators and gas-heated steam radiators are manufactured. Later in the history of the gas stove department the production of gas fires was started, and the rapid expansion of the Company's business in this direction has been little short of phenomenal.

A few years ago was introduced the manufacture of the



Stove Stores.

Fitting Shops.

Loading Platforms.

Moulding Shop.

Cannon new inclined gas fire, which has the desirable quality of ensuring the dispersion of heat not only outwards, but upwards. The latest models have outstripped even the most sanguine expectations as far as immediate popularity is concerned. The demand, which has grown consistently and rapidly, has proved to be widespread. The manufacture of gas meters also forms part of the Cannon activities.

Such is a brief account of how a century-old business adapted itself, midway in its existence, to the production of apparatus for the "new fuel"—an account, too, of how in later years, and in the teeth of oil and electrical appliances, the Company not only maintained, but considerably increased, their output. To-day it is fully realized by the community that the substitute for gas in its many domestic and other purposes has yet to be found—a realization in the bringing about of which the Cannon Iron Foundries claim to have played no small part.

Transport.

Even a hundred years ago, when transport arrangements were, if regarded alongside those of to-day, of an exceedingly primitive character, the Cannon Iron Foundries always put the question of delivery and service in this connection in the forefront, and nothing was left undone that would promote expedition. Down the years that same objective has ever been borne in mind, and as transport has improved, so have the Company grasped every opportunity for rendering better service to their customers. A hundred years ago Cannon manufactures reached home and foreign customers by canal, by road, and by sea. As the years have passed and the railway has developed, the railroads of the world have shared in their distribution. To-day that method is still widely employed; but modern developments have brought to the Company's aid the motor-propelled vehicle. Road transport has again come into its own, and is extensively employed for home distribution. One of the accompanying illustrations shows one of the firm's loading platform sections. Here, and in other similar sections, many thousands of pounds worth of goods are loaded daily into motor lorries, and transported over the roads of England direct to their destination. This transport has shortened considerably the time required between the completion of the order and the actual delivery; and it is the Company's intention to develop still more this method of distribution, and to add to their facilities as rapidly as possible, and thus enhance the value of their service in this direction.

FACTORIES AND WORKSHOPS REPORT FOR 1925.

One of the main features of the report of the Chief Inspector of Factories and Workshops (Mr. Gerald Bellhouse) for the year 1925 is a substantial reduction in the number of accidents recorded—a condition of affairs which would be noted with greater satisfaction, were it not for recognition of the fact that the falling-off is very largely explained by the smaller number of persons who have been employed in depressed industries. But even with this qualification, there is no doubt the emphasis now laid on "Safety First" is having, and will have, an increasingly favourable influence on accident risk as time goes on. Accidents, of course, form only one of many matters dealt with in the report, which is published by H.M. Stationery Office, Adastral House, Kingsway, London, W.C. 2, and branches, at the price of 2s. 6d. net.

In the year under review—while the general position of industry remained much the same as in 1924—the iron and steel and shipbuilding industries suffered from acute depression. Indeed, few areas appear to have suffered more than did the North-East Coast. It is pointed out by the Middlesbrough District Inspector that, while the world production of pig iron has increased, the output for Great Britain has declined by 15 p.ct., and this country now occupies fourth place as a producer. Mr. Bellhouse remarks that the centrifugal movement of industries from the old and cramped surroundings in larger towns to the outskirts continues to be a feature; and in this connection he makes special mention of the areas surrounding London, which go on developing industrially in a remarkable manner. That enterprise on the part of industrialists is not lacking is shown by the number of new processes and developments of existing ones which are recorded in the report. The number of registered factories rose from 142,494 in 1924 to 144,361 in 1925; but workshops further declined from 133,729 to 128,793. This regular increase in factories, and equally regular decline in the number of workshops, has been going on for a number of years, and is in many cases due to the introduction of a gas or oil engine or of electrical power into workshop premises, which are thus transformed into factories.

Accidents.

During 1925 there were reported 159,693 accidents (including 944 fatal ones), which was a decrease of just over 10,000 on the figures for 1924. The depressed iron and steel and shipbuilding industries alone were responsible for a drop of 8000. Building now occupies the unenviable position of having more fatal accidents than any other industrial occupation. As usual a substantial proportion of transmission machinery accidents was of a most serious character; and the unfenced revolving overhead shaft was largely responsible for this state of affairs. The general industrial public are slow to recognize the fact that the harmless looking rotating shaft, once it gets a grip of a worker's clothing, can speedily cause death or mutilation. Frequently the accidents arise from workers approaching revolving shafting for the purpose of attending to belts, oiling bearings, &c. The proper course, it is pointed out, is to stop the shafting when belts have to be replaced, or to reduce the speed to not more than three or four revolutions a minute. At this low speed, if an attendant is at hand instantly to stop the shaft if required, replacing of belts can be done with reasonable safety.

Tar Stills.

The question having arisen as to the precautions that should be taken before any person is allowed to enter a still after it has been opened, the matter was discussed with representatives of the Association of British Chemical Manufacturers and the Association of Tar Distillers, with the result that a number of recommendations were agreed to which are reproduced in the report. The organizations referred to strongly urge their members to adopt these regulations, which are intended to ensure compliance with the Chemical Works Regulations and the avoidance of gassing accidents.

Lighting.

The work of bringing to the notice of employers the recommendations of the Departmental Committee on Lighting in Factories and Workshops has been continued, and during the year two inspectors were detailed off to take readings of the amount of illumination in use for the different processes in various trades over the winter months. Further, when granting an Order for two shifts to an industry in which there are fine processes, care has been taken to ensure that the lighting is suitable and adequate. Problems that have arisen in particular trades are mentioned in the report. By one inspector the opinion is expressed that the glare caused by the strong lights is the most pressing problem in the tailoring and clothing trade (where electric light is said to be used almost universally), and that education on this matter is required, both for employer and employed.

Inquiries in the Eastern Division have been conducted by an inspector who emphasizes the wide ranges of illumination found in almost every industry. Thus, while 67 readings taken were under 2 foot-candles, 81 readings were 11 to 20 foot-candles—a striking difference. This inspector observes that many installations could be improved considerably by better and more intelligent use of the existing systems, including strict attention to cleanliness of fittings, provision of effective shades or reflectors, correct placing of light sources, and immediate replacement of damaged gas mantles or exhausted electric lamps. He found electric lamps covered with dust, which had never been cleaned since fitted in the pendants, and, in speaking of the lack of attention given to the correct placing of light sources mentions a case where he found on certain sewing machines the shadow of the machine falling across the vital viewpoint, while by moving the source of the light by no more than 1 in. the illumination was increased by more than 50 p.ct.

Five-Day Week.

Though the system of working a five-day week has been introduced into a number of factories, it is not possible to foretell at this stage whether it will become a permanent and general institution. In many works bad trade has been the reason for the adoption of the system; and a period of good trade is needed to show whether the firms intend to continue such an arrangement of hours. That increase of output has resulted from the adoption of the system has not been generally claimed; but, on the other hand, there does not appear to be any evidence that output has been diminished. Where the five-day week has been adopted, workers and managers seem to be almost unanimously in favour of it.

Poisoning.

Of twenty-six cases of coal gas poisoning (two deaths), ten occurred in gas-works. Poking-down retorts accounted for two, and emptying purifier boxes for one. A non-fatal sulphuretted hydrogen accident was due to an escape from a sulphate of ammonia plant on a gas-works.

Fatigue and Cramp.

It is stated that at a large Metropolitan Gas-Works a remarkable factor in reducing fatigue and cases of cramp among stokers in the retort houses was a saline drink, supplied in upward fountains. The drink, called "saline solution," is made up in the laboratory of a strength of 180 grammes of salt and 120 grammes of potassium chloride per litre of water; and for drinking purposes 160 c.c. of this concentrated solution is added to a 3 gallon bucket of water. Two tablespoonfuls to 1 gallon of water would be the same thing.

TAR PRODUCTS AND FISH LIFE.

We have been favoured by the Secretary of the Standing Committee on Rivers Pollution (Ministry of Agriculture and Fisheries) with a copy of a non-technical report on the work during 1925.

In the first part of the report there is a general statement referring to the pollution found in various rivers, and it appears to be of such a complex order that it must be extremely difficult for the Committee to determine which class of pollution has the greatest deleterious effect upon fish life. In this section there is very little of direct interest to readers of the "Journal." We note, however, that, in treating of the River Tees, the Standing Committee allude to a meeting which was held at Middlesbrough, and was attended by technical representatives of a large number of firms who discharge effluents into the river. It is remarked that those present were of opinion that so far there are no practical means available for the treatment of coke-oven effluents beyond the obvious possibility of dilution, and that attention should rather be given to sewage disposal on Tees-side as a means of improving the conditions of the river. It is accepted by the Standing Committee that the Tees is suffering from over-dosing with sewage. At the same time, they say that the evidence derived from analyses of the river water points to the presence in the river of toxic materials, which there is every reason to think are derived from coke-oven effluents. It is admitted that there has lately been a lower concentration of tar acids than was at first found, but this improvement may be explained by the reduced activity of the coke-ovens. Then, in connection with the River Dee, a case was found of an effluent which contained a high concentration of tar acids and tar bases, and to possess considerable de-oxygenating power on river water. In the absence of considerable dilution, such an effluent would undoubtedly be harmful to the river; but consideration must be given to relative volumes. In the case in question, the discharge receives preliminary dilution in a small brook before gaining access to the main stream. As a result, no instances have been reported of the actual killing of fish, although complaints have been made that salmon caught in the vicinity possess an unpleasant taste. Therefore suggestions have been made to the firm in question to segregate their effluent, and make such arrangements as will regulate its discharge into the river.

The next part of the report deals with investigations which have been made; and this is what is said in the section treating of the effects of tar products upon fish:

> The harmful effect of tars and of such substances as phenols, cresols, naphtha, &c., on fish has long been known. From time to time, papers on this subject have been contributed to various scientific journals both in America and on the Continent. But in this country the question appears to have attracted little attention, and the amount of published information is very small, though the bearing of researches of this nature on such practical problems as the destruction of fish by washings from tarred roads and by gas-works effluents is obvious. Two important papers on the effect of tar and its constituents upon fish and stream life have recently been received at the Ministry's Experimental Station at Alresford, and have been translated (*see* Standing Committee on River Pollution, Series No. 139). On account of their exceptional interest they are summarized below.
>
> The first, by Hein, "On the Effect of Coal Tar on Fish and some Invertebrates," appeared in 1906. His experiments were restricted to coal tar, of which watery extracts of different strengths were prepared. The effects of these extracts on fish were then determined. His main findings may be summarized very shortly as follows:
>
> (1) In all groups of animals examined, tar acted as a nerve poison.
>
> (2) Concentrations of the order of 1 part of tar in 80,000 parts of water usually proved fatal to fingerling trout in 18 to 20 hours. Larger trout were somewhat more resistant.
>
> (3) Weaker solutions were found to produce the same reactions, and test fish moved off in search of unpolluted waters.
>
> (4) Other species of fish, such as barbel, gudgeon, and rainbow trout, showed the same symptoms as trout, but some were able better to withstand the poisonous effect.
>
> (5) The invertebrate animals tested, crustacea, dragon-fly larvæ, gnat larvæ, snails, &c., were, in general, much more resistant than fish.

The second paper, by Steinman and Surbeck, "On the Toxicology of Fishes," appeared in 1920. The workers restricted their experiments to fish, of which some nine species were used; but they determined the effects of a large number of different tar products, such as naphthalene, benzole, phenol, toluole, benzene, &c. Those interested in the effects of the different substances tested are recommended to consult the original paper, since, by reason of the large number of experiments performed, it is impossible adequately to summarize them.

The authors raise a number of points of practical importance. Thus they say: "Fish move away to purer water and avoid the polluted zone. This, to the owner of a fishery, is the same as if the fish were actually killed by the poison. Indeed, the conditions are even better for him in the latter case, as, after destruction, he can restock. In the case of a water continuously polluted (but where the amount of poisonous material is less than the lethal dose), such a proceeding would be absolutely useless."

A further question of considerable importance is what is to be regarded as the potential diluent. The authors warn us that it is incorrect to regard the total volume of a large river, which already receives effluents from various factories along its banks, as the diluent, in deciding what volume of some new effluent may be turned in with safety. Further, they emphasize the need for caution in fixing dilution limits for a substance. Thus, suppose a regulation permitting one substance to be present to the extent of 1 part per 1000. What is now the position, if there are several factories along the river all turning in the same effluent? Each individual can turn in an effluent containing 1 part per 1000; and even if the fishery be completely destroyed by the united effect of the several factories, each factory is itself within the law.

A further point that emerges from these experiments is that of the toxicity of substances that are held to be insoluble. In chemistry, especially in technical chemistry, substances are frequently held to be insoluble when only minute quantities, (say) a few milligrams per litre, go into solution. Such substances have frequently been held, *ipso facto*, to be harmless. Experiments showed, however, that these so-called insoluble substances may be fatal to fish.

Finally, the authors draw attention to another very interesting point—viz., the resistance of the fry of trout and char to poisonous substances. They show that very young fry withstood the action of phenol and of xylol and toluole mixtures for hours, while older fish died in these solutions in a few moments. They point out that the view advanced "that the destructive action increased as the weight of the individual decreased" is incorrect.

Institution of Fuel Technology.—The autumn meeting of the Institution will take place on Dec. 7 and 8. On the first day Sir Alfred Mond will deliver his presidential address, and an inaugural dinner will be held in the evening. Among the papers to be read are the following: "Laws of Gas Flow in Furnaces," by Prof. V. Groume Grjimailo; "Low-Temperature Distillation of Coal," by S. McEwen; "The Combustion of Carbon," by Prof. R. T. Haslam; "Practice in Gas Manufacture," by Thomas Hardie; and "Smoke and Public Health," by Dr. J. S. Owens.

CONDITIONING OF BOILER WATER.

[From a Paper by Dr. R. E. Hall (Physical Chemist, U.S. Bureau of Mines) at the Mid-West Power Conference, Chicago.]

Scale Formation on Evaporating Surfaces.

In preventing scale formation on the evaporating surfaces, there are two major factors to be considered—operating pressure, and the sulphate concentration of the boiler water. Adherent scales which grow in thickness are formed by direct deposition of salts contained in the water—calcium sulphate, calcium silicate, and magnesium silicate. The solubility of these substances decreases with temperature increase; while those substances which separate from the boiler water as sludge increase in solubility as the temperature rises. Consequently, the chemical used in the final conditioning of the water must be one which, if maintained at the concentration defined by the operating pressure and the amount of sulphate in the water, prevents the formation of calcium sulphate or silicate, and magnesium silicate, at the evaporating surfaces, and ensures the formation of sludge-forming substances only.

The two chemicals employed for this purpose are sodium carbonate and sodium phosphate. If the make-up water is evaporated, and the only impure water entering the boiler consists of condenser leakage, then the conditioning of the boiler water with phosphates is the only chemical control necessary. If the make-up water is not evaporated, then economy demands pre-treatment—with lime and soda ash, or by a base exchange process if the water is not high in temporary hardness—followed by final conditioning with phosphate. In the pre-treatment, any excess chemical must be avoided, otherwise detrimental concentrations of caustic alkalinity will develop in the water. If it is deemed desirable to limit the amount of soluble solids in the water, and the feed water is one containing sulphate, barium carbonate may be used instead of sodium carbonate—thus removing much of the sulphate, as well as the calcium. In any event, the final control of the boiler water must be based on the use of a suitable substance such as phosphate.

Scale Formation on Preheating Sections.

The problem of scale prevention is much simpler on these surfaces than on the evaporating surfaces, since (1) there is only one main constituent in these scales—namely, calcium carbonate; (2) deposition of insoluble solid material occurs by reason of supersaturation throughout the body of the water, and not at the surfaces alone, as in the case where evaporation is occurring; and (3) no decomposition of the chemical used in treatment occurs.

To prevent scale formation on these surfaces, it is necessary that no bicarbonate (HCO_3) remain in the water, and it is advisable that a small concentration of caustic soda and loose crystals of suspended calcium carbonate be present. This condition may be maintained externally in a water which has been correctly treated, or by using the excess caustic alkalinity in the boiler water itself. The latter control involves recirculating water from the boiler through the feed lines or the preheating sections.

Corrosion.

In general, any corrosion of the boiler system surfaces in contact with water is electro-chemical in character. Anodic conditions in the metal develop from differential oxygen concentration, especially in feed lines and economizer tubes, from impurities in contact with the metal (as mill scale), or from a state of strain or local differences of temperature. The control of corrosion, therefore, signifies so conditioning the water that, at any anodes which may develop, passage of current generated results not in the dissolution of the boiler metal, but in the discharge at the anode of some component in the boiler water. Hydroxide (OH) is specific in this respect as regards sulphate waters, and satisfactorily inhibitive for practical purposes as regards chloride. The control for inhibition of corrosion is as exact as that given for elimination of scale formation; and even in the extreme case of a raw water saturated with air, feed line or economizer corrosion can be reduced to negligible proportions.

Control of CO_2 in the Steam.

For such control, the obvious thing to do is to eliminate carbonates from the boiler water. If the make-up water is evaporated directly, control of the boiler water with PO_4 limits the quantity of carbon dioxide to the amount derived from condenser leakage. If the feed water is given primary treatment with lime and soda ash, it is necessary to avoid excess of treatment, and to use a secondary control with PO_4 on the boiler water. If the feed water contains temporary hardness, and is treated by a base exchange process, it may be necessary to remove the excess sodium bicarbonate in the water after treatment, by the use of acids or other means. The final control must be established on the boiler water with a chemical which does not decompose at the operating pressures in question.

The control of sludges and soluble salts in the boiler water, their relation to wet steam, and the removal of any boiler water and its suspended insoluble material from the steam before it leaves the boiler nozzle are as integral parts of any complete system of boiler water conditioning as the factors which have been considered.

Manchester and Gas.

In connection with Manchester's Civic Week, the "Manchester Guardian" published on Oct. 2 a special "Civic Week Supplement." In this are some impressive figures relating to the city's gas undertaking. The capital employed by the Gas Department last year was £5,153,309, and the loan debt was £2,039,127. The area of the works and other properties was nearly 196 acres. The productive capacity of the four works is 37,500,000 c.ft. in 24 hours, and the total quantity made last year was 7,386,356,000 c.ft. The quantity of coal carbonized in the process was 506,891 tons. The storage capacity, which consists of twenty holders, is 34,770,000 c.ft. The total length of mains laid is 1067¼ miles, the number of cookers, grillers, and fires in use 205,860, and the number of street lamps burning gas 22,409. In addition to the existing stations, work has now been begun on a great new station at Partington, which is to have a capacity of 8 million c.ft. a day. Mention is made of many firms associated with the gas industry, among whom are West's Gas Improvement Co., Ltd., R. & J. Dempster, Ltd., General Gas Appliances, Ltd., Crossley Bros., Ltd., and the National Gas Engine Company.

Massachusetts Institute of Technology.—A field station of the new course in Fuel and Gas Engineering and the School of Chemical Engineering Practice has been established by the Massachusetts Institute of Technology at the Bayonne Refinery of the Tide Water Oil Company. Last October the Institute inaugurated a course in Fuel and Gas Engineering, the purpose of which is to afford graduate engineers an opportunity for specialized training in the manufacture and utilization of fuels. This course consists of nine months' theoretical training at the Institute, followed by six months' field work at the Lackawanna plant of the Bethlehem Steel Company, the Iroquois Gas Company, the Cambridge Gas Light Company, and the Bayonne Refinery of the Tide Water Oil Company. The student receives no compensation from the co-operating company; and therefore his work may be planned to have the maximum educational value. The field work consists, for the most part, of investigations and tests of production processes and plant.

Storage of Coal.

Writing in the September issue of "Combustion," W. T. Conlon says that the greatest loss from coal storage is due to fires caused by spontaneous combustion. A temperature of 150° Fahr. must be regarded as dangerous in a coal pile; and this temperature usually occurs from 10 to 15 ft. from the surface of the average pile of coal. When this temperature is reached, there is only one thing to do to avoid fire, and that is to dig out the heated section. Water will not put out a fire in the pile, but will conduct it to another part, thereby starting additional combustion. The main cause of the absorption of oxygen is the occurrence of voids between lumps of coal; and a suggested method of storing is to place the coal in layers, approximately 3 ft. or less deep, by means of drag scrapers. Voids should be filled with fines, and a more or less uniform structure maintained through the pile by cutting down. If, in addition to layer storage, the coal is rolled or packed, the fire hazard will not be so great.

Safety in Mines Research Board.—At one time it was believed that spontaneous combustion in coal mines was due solely to the heat generated by the oxidation of iron pyrites present in the coal. While modern research has shown that the phenomenon is most often traceable directly to the oxidation of the coal substance by air, there seems little doubt that the presence of pyrites may sometimes be a contributory or even a determining factor. An account of an examination of the various types of pyrites occurring in coal, with a view to determining their composition and to identifying those types which oxidize rapidly, is contained in a paper entitled "Pyritic oxidation in relation to the spontaneous combustion of coal," by H. Macpherson, N. Simpkin, and S. V. Wild, of the Research Staff of the Lancashire and Cheshire Coal Research Association. (Safety in Mines Research Board Paper No. 26, H.M. Stationery Office, Adastral House, Kingsway, W.C. 2, price 1s. net.) The results emphasize the importance which must be attached to the mode of existence of pyrites when considering its probable influence on the spontaneous combustion of coal.

CORRESPONDENCE.

[We are not responsible for opinions expressed by Correspondents.]

Three-Part Gas Rates.

SIR,—The kind reception accorded my previous letter tempts me to add a little to it in the way of explanation, and also to cover some additional points raised by Mr. Evetts in your issue for Sept. 1.

Mr. Evetts is correct in his assumption in paragraph six that the term "fixed charges," as used in this country, includes depreciation and the fair return of 8 p.ct., out of which bond interest charges and dividends are paid.

As to the allocation of the fixed charges on mains, services, and meters, the tendency in this country seems to be to charge the bulk of these amounts to customer rather than to demand. As a justification of this, we could compare the investment in mains, meters, &c., for a town of several thousand customers with the much smaller investment which would be necessary if the company continued to have exactly the same demand, but supplied all of its gas to one customer. Another method is to calculate the investment which would be necessary to serve all of the customers through the minimum-size main—namely, 2 in.—which would be all that would be necessary if the company could dictate at what time gas should be used, thereby eliminating the demand element. The difference between the actual costs of the system and the cost of the hypothetical system would be allocated to demand, while the cost of the hypothetical system would be allocated to customers.

In paragraph number nine, Mr. Evetts speaks of the "weakness of the Fort Collins system." In my letter I neither defended nor admitted the weakness of the Fort Collins rate, but merely explained it. Since the question has been raised, however, I feel compelled to defend the use of a commodity charge in excess of the theoretical figure. This I hope to do partly by quoting Mr. Evetts' words on p. 472—namely, "in other words, there are many of the non-profitable customers who are better as customers than derelicts." Some recognition must be given to the amount of customer and demand charges which the traffic can most easily bear; and a higher commodity charge is therefore necessary to offset the decrease in the customer and demand charge. Further than this, an excess of commodity charge over commodity costs is necessary to take care of future changes in load conditions. For instance, suppose a company put in a theoretically correct rate and many of the customers responded to that rate by increasing the quantity of gas which they used without increasing their individual demands, thus acquiring much better load factors. Demand collections would therefore remain stationary, but our demand cost would probably increase, due to the increased overlapping of the customer demands. So that, unless the commodity charge contains some small element of the demand cost, a readjustment of rates would be necessary. A third reason for a commodity charge higher than the bare cost of producing gas would be to prevent waste by the customer. A fourth reason is that if the installation of equitable rates enables the customer to use more fully the service supplied by the gas company, the company is entitled to a higher return, and so is justified in including a small element of profit in the commodity charge.

It is not very difficult to calculate with reasonable accuracy the proper division of customer charges from demand charges. At the coming Convention of the American Gas Association, to be held in Atlantic City, New Jersey, Oct. 11 to 15, one of the Accounting Committees will submit a detailed allocation of the actual figures of at least two companies. It is true there are a number of items which present the same problem as that encountered by the butcher who killed a calf and then tried to determine the cost of the hide as compared with the cost of the meat: but these present minor difficulties.

The Montgomery rate, called Town B by Mr. Evetts, was not mentioned by me as one to be compared with the Fort Collins rate, but as an example of high readiness-to-serve rates existing in this country. The rate in Town A is for natural gas, where the use of gas for house heating purposes brings about an extreme cold weather peak, and necessitates a much more strict determination of the demand charge than in the manufactured gas community, Town B. In fact, in Town B the method of determining the demand is an arbitrary one in that all customers for whom a 5-light meter is of ample capacity, which means over 90 p.ct. of the customers, are given the minimum rating of 30 c.ft. per hour. In Fort Collins, on the other hand, not only is the demand measured, but each customer is limited by a limiting meter to the demand for which he contracts. Another item of difference between the two towns would be noted if the charges were calculated on a thermal basis, for the natural gas supplied to Town A contains about twice as many B.Th.U. per c.ft. as the manufactured gas supplied to Town B.

At the foot of p. 471, Mr. Evetts heads a paragraph thus: "Difficulties Facing Adoption *in this Country*." The last three words were unnecessary, for we have exactly the same difficulty here. For example, the New York State Legislature passed a law forbidding any and all gas service charges. The main cause for the present unpopularity of service charges lies in the fact that almost every service charge now in existence was put in as an increase in rates. It came as an added charge for which the customer received nothing additional, and he therefore resented it. We have found by actual experience that if the service charge is put in on an even trading basis—the commodity charge being reduced so that the same total revenue is received—its reception is much more favourable. Especially is this true where the service charge is made large enough (over one dollar per month) so that a substantial reduction can be made in the commodity charge. If offered a choice between several rates, each of which yields the same money to the company, most customers will pick a service charge type as being best for the community. I do not believe the mental outlook of the British consumer will be different from that of the consumer in this country, if approached in such a manner.

It is hard to say how the non-profitable customer can be eliminated, as suggested by Mr. Evetts, by accepting new consumers under a two or a three part tariff, and not permitting them to take the straight meter rate which is even then being applied to other customers. I fear Mr. Evetts will find his prediction that "in a short time the percentage of non-profitable consumers will be very small" would not prove correct. In the companies mentioned in my previous letter which have had optional rates in effect for over fifteen years, and still find over 90 p.ct. of their customers remaining on the straight meter rate, serious attempts, backed by energetic new business departments, were made to get as many customers as possible to choose the three-part rates.

C. S. REED, Rate Consultant.

American Gas Association,
342, Madison Avenue,
New York City,
Sept. 24, 1926.

REGISTER OF PATENTS.

Automatic Control in Gas Making.—No. 238,519.

HUMPHREYS & GLASGOW, LTD., of Victoria Street, S.W. 1.

No. 14,690; June 5, 1925. Convention date, Aug. 15, 1924.

This invention relates broadly to a basically novel system of electrical control and operation of the various agencies which co-operate in the manufacture of gas; and more particularly to the specific application of such a system to a water gas plant.

The complete specification covers 14 sides, and is accompanied by some 24 drawings and by 33 claims. The following introduction to the specification indicates its scope.

Broadly in contradistinction to the system described in specification No. 229,399 [see "JOURNAL," Vol. 170, p. 128] (wherein mechanical means are provided for automatically ensuring proper cyclic valve operation, and an electromagnetic device shuts down the plant when current to motors fails) the present invention comprises main operating valves, motive means for the same, an electromagnetic operator for controlling each of said motive means, electric circuits for controlling said electromagnetic operators, a safety shut-down switch included in said circuits, and automatic means for throwing said switch adapted to operate on failure of current in a part of said circuits. The invention includes, furthermore, certain improved apparatus for automatic timing and control of the circuit changes incidental to operation of the electrical system in question.

The following are some of the principal advantages put forward for the invention.

The system operates on a normally closed electric circuit, so that failure of current causes automatic shut-down. The construction is such that within fifteen seconds after failure due to broken wire or loose connection the system can be automatically shut down in safe condition on restoration of current, instead of waiting until the wire fails when called upon to carry current.

The entire apparatus is checked up every fifteen seconds before and after valve operation is due, and automatic shut-down in safe position results when such "checking-up" discloses a failure of operation.

In cases of accidental grounding of the electric system, the entire apparatus is automatically shut down in safe position.

The apparatus can be taken over to hand control on any cycle at any time with full protection by interlocking switches and by safety shut-down.

The relation between blow and run in a water gas can be varied within a wide range.

The apparatus automatically shuts down to safety when re-coaling is required, and this occurs either after a blow or after a run, as desired. When so operated after a run, the set is automatically purged before shutting-down.

Whenever a shut-down occurs due to failure of a valve in any sequence, location of the offending valve is easily and quickly accomplished.

The apparatus is capable of going right on with a cycle after a shut-down, instead of having to return to zero first.

Purification of Gas.—No. 248,355.

HUMPHREYS & GLASGOW, LTD., of Victoria Street, S.W. 1 (Assignees of W. H. Fulweiler, of Wallingford, Penn.).

No. 4279; Feb. 15, 1926. Convention date, Feb. 27, 1925.

This present invention relates to improvements in the purification of illuminating and other gases, containing CO_2 and H_2S, from hydro-

gen sulphide by scrubbing them with an alkaline solution containing a soluble iron sulphide capable of absorbing hydrogen sulphide as alkaline sulph-hydrate, and then regenerating or actifying the sulph-hydrate in the solution by the action of air producing free sulphur.

Specification No. 237,920 [see "JOURNAL," Vol. 174, p. 110] described a process in which sodium sulph-hydrate produced by absorption of hydrogen sulphide from the gas is decomposed by passing subdivided air through the solution. The present invention consists of an improved process of actifying such a foul solution. It consists in releasing sulphur as such, and foaming off the sulphur, by aerating the foul solution under such (preferably controllable) conditions that the concentration of thiosulphate in the solution is maintained just above 20 gr. per litre. Thus the advantage of removal of the sulphur in the form of foam (which is *per se* known) is obtained without using a suspension of ferric salts; the processes of fouling and revivification of the solution being continuous.

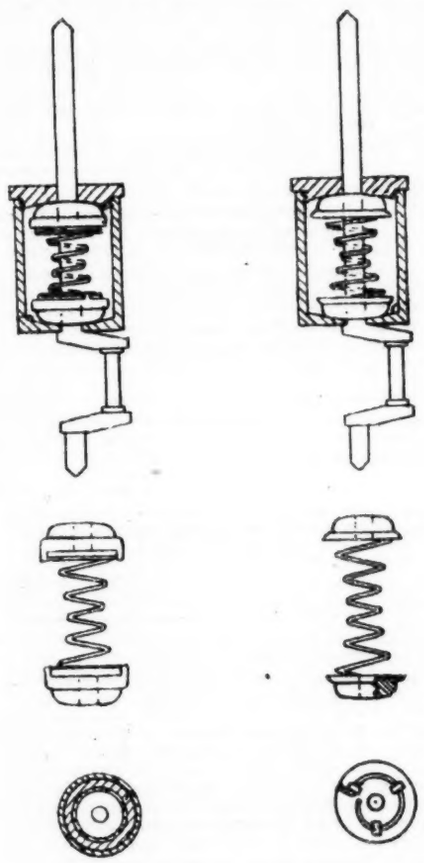
In the process, the absorption of hydrogen sulphide is limited to less than 50 grains per gallon of the foul solution by controlling the concentration of the alkali; and in the actification of the solution the relation of bicarbonate to carbonate is maintained at from six to fourteen to one by increasing or decreasing the air-blast.

Stuffing Boxes for Gas Meters.—No. 257,417.

COOKE, A. G., and PHILLIPS, B. C. & R. A., all of Hove.

No. 23,349; Sept. 18, 1925.
No. 14,593; June 9, 1926.

This specification covers two slightly differing designs of removable attachment for the stuffing boxes of gas meters, &c.; the main feature in each case being a spool spring contained between two



A Joymanco Stuffing Box.

flexible pads which bear on concave surfaces in the stuffing box. The construction will be clear from the sets of drawings which we reproduce.

Inverted Burners.—No. 257,506.

FALK, H., and FALK, STADELMANN, & CO., LTD., of Farringdon Road, E.C. 1.

No. 6038; March 3, 1926.

According to this invention, the burner nozzle and mixing chamber of a burner is made in two portions, the lower of which is provided with an internal shoulder for the reception of the perforated magnesia disc, the internal periphery of the portion above the shoulder being formed with a screw-thread with which a screw-threaded neck on the other portion of the burner tube engages.

By this construction a burner tube is obtained, the upper part of which is of even external diameter throughout, as is the case with the existing burner fitted with the gauze disc and made in one piece.

Tar for Road Making.—No. 257,560.

SENSICLE, L. H., of Pelton Fell.

No. 18,564; May 21, 1925.

This invention relates to an improved process for the manufacture of prepared tar for road making, by which, if desired, the step of distillation may be omitted. The invention aims at the adjustment of the physical and chemical properties of the tar. A further object is to obtain tars with sufficient absence of light oils, naphthalene, and phenols without distillation. Another feature is the adjustment of the viscosity and distillation range of the tars before or after dehydration, by blending a plurality of tars of diverse composition or by selecting the tars and condensates of a bye-product recovery plant.

A "prepared" tar suitable for road making is produced direct from a bye-product plant by separating condensates rich in naphthalene and phenol, so that the composition of the main tar condensate can be adjusted with respect to its viscosity or other properties without the inclusion of undesired quantities of naphthalene and phenols. This is accomplished either by excluding the naphthalene and phenol portions, and then dehydrating the tar, or, in a direct recovery plant, by removing a part of the naphthalene and phenol from the condensates rich in these, and using the condensate so treated for mixture with the main tar condensate. The invention is applicable to the whole of the tar produced in direct recovery plants, and to a portion of that produced in indirect recovery plants.

If in the direct process it is required to use for road making all the tar made, the serpentine condensate is kept entirely separate from the tar. Then the requisite limited quantities of serpentine condensate are added to attain the correct viscosity and otherwise to comply with the specification. Complete exclusion of the naphthalenic condensate would result in a tar of too high a viscosity for road purposes, whether for surface tarring or tar macadam. By the invention it is possible to remove a large proportion of the naphthalene from the condensate by cooling and crystallization, while if necessary it may also be washed with alkali to remove phenols; both of these operations being carried out before adding the limited quantities of light oil necessary to bring the tar to the right viscosity and distillation range.

Thus the present process renders possible the production of tars of similar viscosity and distillation range to those produced by other methods, but with the additional advantage that the phenol and naphthalene content is largely under control, and capable, when necessary, of considerable reduction.

In indirect recovery plants tar condensed out before the tar scrubbers may be used, mixed if necessary with some of the tar removed at the scrubbers.

APPLICATIONS FOR PATENTS.

[Extracted from the "Official Journal" for Sept. 22.]

Nos. 22,479—23,101.

CROSS & SON, LTD., W.—"Gas fires." No. 22,818.
DAVIS, H. N.—"Atmospheric gas burners." No. 23,004.
FOSTER & PULLEN, LTD.—"Connections for gas lamps." No. 22,702.
GILL, A.—See Foster and Pullen, Ltd. No. 22,702.
KIRBY, J. I.—See Cross & Son, Ltd., W. No. 22,818.
MANTE, P.—"Gas burner." No. 22,705.
RADIATION, LTD.—See Davis, H. N. No. 23,004.
SALERMO, LTD.—"Distillation of carbonaceous, &c., materials. No. 22,791.
SALERNI, E. M.—See Salermo, Ltd. No. 22,791.
SCOTT, A. A.—"Gas cooking, &c., ovens." No. 22,661.
SCOTT, E. H.—See Scott, A. A. No. 22,661.
SCOTT, E. M.—See Scott, A. A. No. 22,661.
SCOTT, P. R.—See Scott, A. A. No. 22,661.
STANTON IRONWORKS CO., LTD.—"Pipe joints." No. 22,887.
TWIGG, W. R.—See Davis, H. N. No. 23,004.
WILSON, P. H.—See Stanton Ironworks Co., Ltd. No. 22,887.

[Extracted from the "Official Journal" for Sept. 29.]

Nos. 23,102—23,739.

BROMLEY, H. H.—"Fitting for gas fires." No. 23,314.
COLLIN & CO.—"Coking retorts." No. 23,543.
FLOOD, W. H.—"Igniting device for gas fires." No. 23,635.
GIBB, D. M.—"Gas fires." No. 23,185.
LOW-TEMPERATURE CARBONISATION, LTD.—"Distillation of coal, &c." Nos. 23,706, 23,710.
PARKER, C. H.—"Distillation of coal." Nos. 23,706, 23,707, 23,708, 23,709, 23,710.
PARKINSON STOVE CO., LTD.—See Gibb, D. M. No. 23,185.
PARKINSON & COWAN (GAS METERS), LTD.—"Liquid meters." No. 23,511.
PEHRSON, A. P.—"Distillation of carbonaceous materials." No. 23,400.
SCHAEFER, J.—See Collin & Co. No. 23,543.
SHEPPARD, H. L.—See Bromley, H. H. No. 23,314.
SIMPSON, K. M.—"Low-temperature carbonization of coals." No. 23,429.
SMITH, C. H.—"Coke conveying machines." No. 23,644.
SOUTH METROPOLITAN GAS CO.—"Manufacture of hydrocarbons." No. 23,626.
SOUTH METROPOLITAN GAS CO.—See Smith, C. H. No. 23,644.
STANIER, H.—See South Metropolitan Gas Co. No. 23,626.
STEPHENSON, F.—"Water-sealed valve for gas supply mains." No. 23,163.
WILLIAMS, L. A. MORGAN-.—See Stephenson, F. No. 23,163.

MISCELLANEOUS NEWS.

GAS TESTING AT WIMBLEDON AND MITCHAM.

Wandsworth Gas Company's Appeal.

At the offices of the Board of Trade on Tuesday, Sept. 28, an inquiry was held by Sir Richard Glazebrook, F.R.S. (Chief Gas Examiner), into an appeal by the Wandsworth, Wimbledon, and Epsom District Gas Company against the results of some tests carried out under the Gas Regulation Act on gas supplied by the Company.

The Company were represented by Mr. Jacques Abady (Barrister-at-Law); and there were also present the chief officials of the Company. The Borough of Wimbledon were represented by Mr. H. Emerson Smith (Town Clerk); the Urban District Council of Mitcham, by Mr. Stephen Chart (Town Clerk); and the Urban District Council of Merton and Morden, by Mr. H. Mays (Assistant Town Clerk). These three Local Authorities were in the position of respondents in the proceedings, which related to tests of the Company's gas made by the Gas Examiner employed by these Local Authorities. The point of the proceedings was that the Company objected to a report made by Mr. Johnston (the Gas Examiner), as being incorrect in regard to certain tests, and appealed to the Board of Trade to have the results of these tests annulled.

Mr. Abady said the appeal was in respect of three tests made by Mr. Johnston on July 27, July 30, and August 2 last; the first and second tests were on behalf of the Corporation of Wimbledon, and the third test on behalf of the Corporation of Wimbledon, the Merton and Morden Urban District Councils, and the Mitcham District Council. The first test was taken at Haydon Road, Wimbledon; while the other two tests were at the testing station situated at the Mitcham Gas-Works of the Company. The first was objected to on the ground that, owing to its disagreement with other tests made on the same gas at approximately the same time, by both the Company and the London County Council, the test made by Mr. Johnston must obviously be incorrect; and in respect of this particular test, said Counsel, no serious issue arose, except the one of general disagreement mentioned. In the tests on July 30 and Aug. 2, however, a more serious issue was involved, because it was contended, and ultimately the facts as stated by the Company had been accepted by the Local Authorities concerned, that the times marked by Mr. Johnston in his record book were not in fact the times at which he actually took the tests. The time during which Mr. Johnston was at the Mitcham Gas-Works was, the Company contended, insufficient for him to have carried out the tests in accordance with the instructions issued to gas examiners under the Gas Regulation Act. This, said Mr. Abady, was a serious matter; and although the facts which the Company had sent forward to the Board of Trade had been admitted by the Local Authorities, he felt it his duty to produce such proof as to make it overwhelmingly clear to the Chief Gas Examiner that the Company were abundantly justified in making the complaint they did. The declared calorific value of the Company's gas was 470 B.Th.U., and the penalty limit 441·8 B.Th.U. He wished to emphasize this because neither the test of July 27 nor that of July 30, even if accepted as accurate, would render the Company liable to penalty. Another factor in the situation was the Coal Emergency Regulations, although these really did not affect the results of the tests, seeing that they did not bring the Company within the penalty margin. Nevertheless, if it were necessary, the Company would be entitled to plead the Coal Emergency Regulations in extenuation of the fact that the calorific value was below the declared calorific value. The Company, however, appealed against the tests standing, on the ground that they were not correct; and, again, it was urged upon the Chief Examiner that none of the tests was made in accordance with the directions of the Gas Referees. With special reference to the Coal Emergency Regulations, the Gas Referees issued a notice to gas examiners on May 5, in which it was stated that the following addition should be made to all gas examiners' reports during the continuance of the Regulations:

> In connection with this report, attention is directed to Part VII. of the Coal Emergency Directions (*e*) 4 given by the Board of Trade on May 1, 1926.

The importance of this was to make it clear that gas undertakers were relieved from liability to penalty for supplying gas below the declared standard during the continuance of the Coal Emergency Regulations; and the addition of this statement to the reports of the examiners was an instruction to the examiners by the Board of Trade. To none of the three reports of which complaint was now being made, however, had Mr. Johnston made this addition. He mentioned this omission to show the spirit in which this particular Gas Examiner approached his task. The test on July 27 showed a figure of 442·4 B.Th.U.; while that of July 30 was 451 B.Th.U. The test on Aug. 2 showed a figure of 440·1 B.Th.U., which was 1·7 B.Th.U. below the normal penal limit; but none of these figures was accepted. Although the Company were entitled to have a representative present when the Gas Examiner made his tests, they did not, in fact, do so. Referring to the general notification of the Gas Referees to examiners, Mr. Abady mentioned certain details in these, and contended that it was impossible, in the time which the Company's records showed the inspector to be present at the testing station, for the necessary tests to have been carried out. For instance, it was requisite to prove the accuracy of the meter, and to burn the gas for at least 45 minutes before making the first reading for calorific value, and for a period of 20 minutes before testing for purity. If, therefore, the Gas Company knew that the Examiner entered the testing station at a particular time, and must have made the test for calorific value before 45 minutes, it was clear that the Examiner was not carrying out his instructions. It would be shown that this, in fact, was the case—especially in regard to the tests on July 30 and Aug. 2, which were made at the Mitcham Gas-Works. There were also conditions to be fulfilled before the actual tests were made, all of which occupied a certain amount of time. Dealing specifically with the test complained of on Aug. 2, Mr. Abady said the statement notifying the appeal, which was communicated to the Borough of Wimbledon, the Merton and Morden Urban District Council, and the Mitcham Urban District Council, contained the following:

> It is not the custom of the appellants to exercise their right to be present during tests made by the Gas Examiner; but the times of his arrival and departure at the Mitcham Gas-Works are duly recorded by Officials of the appellants.
>
> On June 28, though the times recorded by the Gas Examiner were 8 p.m. for SH_2, 8.45 p.m. for calorific value (first test), and 10 p.m. for calorific value (second test), the record shows that he did not arrive until 8.45 p.m., and departed at 10 p.m. It is obvious, therefore, that, allowing for the time taken for proving the meter, and for burning the gas before taking the tests, neither of them was in accordance with the Notifications of the Gas Referees.
>
> The report now appealed against records the times of the two tests for calorific value at 11.20 a.m. and 12.45 p.m., whereas the record of the Gas Examiner's arrival and departure shows that he arrived at 11.18 a.m. and departed at 12.50 p.m.
>
> It is submitted that the tests were not made in accordance with the General Notification of the Gas Referees in the following respects:
>
> (*a*) The first test is timed two minutes after the Gas Examiner's arrival.
>
> (*b*) The gas was not burning for 45 minutes before the first reading of the testing of calorific value was made.
>
> (*c*) The meter was not tested.
>
> (*d*) The time during which the Gas Examiner was in the testing place was insufficient for two tests of calorific value to have been made in accordance therewith.
>
> The report now appealed against does not represent the correct calorific value at the times mentioned therein, because it shows results which differ from other tests made on the same day in accordance with the said Notification. The calorific value of the gas made at the Mitcham Works on Aug. 2 was as follows:

Particulars of Test.	Time.	Result in B.Th.U. Gross per C.Ft.
Test at works by appellants.	10 a.m.	455
	11 a.m.	451
	12 noon	451
	1 p.m.	453

These values compare with the test appealed against as follows:

	11.20 a.m.	445·8 } mean
	12.45 p.m.	434·3 } 440·1

> The report appealed against is not in accordance with the notice of the Gas Referees issued on May 5, 1926.

Explaining the procedure with regard to the attendance of Mr. Johnston at the testing station at the Mitcham Gas-Works, Mr. Abady said the keys were kept by the gate-keeper, who handed them over to Mr. Johnston on request, and recorded the time in the Company's book, as well as the time at which they were handed back to him by Mr. Johnston. Counsel said that to carry out the tests in accordance with the Gas Referees' Notification the minimum time required would be 2¼ hours for two tests, or a little over one hour for a single test. The times recorded by the Company, however, showed that Mr. Johnston was not in the testing station sufficiently long to have carried out the tests upon which he based his reports, seeing that a deficiency was shown as compared with the declared calorific value, and two tests were necessary. What the Company complained of did not appear to be an isolated matter, but more or less the practice of this particular Gas Examiner to put into his record books times of attendance at the testing station which were palpably false.

Mr. *Herbert Nairn* (Chief Chemist to the Company) produced the gate-keeper's book showing that the times of arrival and departure did not coincide with those recorded by Mr. Johnston, and said it was impossible in the time recorded in the Company's books for Mr. Johnston to have carried out the tests in accordance with the Notification of the Gas Referees. In the case of the Aug. 2 test, the calorific value testing was carried out two minutes after Mr. Johnston actually arrived. On July 30 there were similar discrepancies in the times of arrival and leaving between the record made by Mr. Johnston in his own book and that made by the gate-keeper. In this case, also, the time which Mr. Johnston actually spent in the testing station was not sufficient for him to have carried out the test in accordance with the Notification.

Mr. Abady again emphasized the point that, according to the Company's record books, the discrepancies between the inspector's records of his attendances at the Mitcham testing station and those of the Gas Company in the two instances complained of were not isolated cases; and he asked the Chief Gas Examiner whether, having had the

matter brought to his notice, he would desire to look into the records further. The Company felt it was absolutely necessary, having regard to the nature of these tests and the obligations of both the Company and the Local Authorities to the public, that no gas examiner should be permitted to go on examining gas when it was found that he made entries which did not represent the actual facts.

Sir Richard Glazebrook: I think we must confine our attention to the particular facts of this appeal.

Mr. Abady then asked the Chief Gas Examiner to annul the reports complained of. Secondly, with great respect, he asked, with all the emphasis he could, that the Chief Examiner should indicate the grounds of his decision to the Local Authorities concerned, because the Company invited those Local Authorities to consider their position, having regard to section 4 sub-section (3) of the Gas Regulation Act, which authorized the appointment, as a gas examiner, of a competent and impartial person. Thirdly, he asked the Chief Examiner to allow costs, in accordance with rule 14 of the appeal procedure, under which he had discretionary powers.

Mr. Emerson Smith said he was authorized to speak on behalf of all the Local Authorities concerned, and to lay before the Chief Gas Examiner the position as it appeared to them. The Authorities concerned regretted that they should find themselves brought before the Chief Examiner for his adjudication. So far as Wimbledon was concerned, there had not previously been an official complaint concerning the gas examiner during the whole time he had been in their service. The broad facts as stated by the Company must be admitted; but at the same time it was necessary to point out that Mr. Johnston, who was an "F.I.C." and "F.C.S.," had been a servant of the Corporation of Wimbledon for upwards of fifteen years, not only as Gas Examiner, but as Analytical Chemist, and the Corporation had never found it necessary to criticize his service. The Corporation thought it should be said that they had the utmost confidence in the high integrity of Mr. Johnston; but having to face this appeal to the Board of Trade, he wished to explain that the Gas Examiner had been under a misapprehension as to his duties since the Coal Emergency Regulations came into force. Mr. Johnston believed that, having regard to these Emergency Regulations, it was not necessary to observe strictly the Notification of the Gas Referees. In this he was wrong, and the Corporation admitted he was wrong. Mr. Johnston was sorry for the misapprehension, and so were the Local Authorities concerned. Where Mr. Johnston went wrong was in thinking that, as the Company were relieved of the penalty in regard to calorific value during the continuance of the Coal Emergency Regulations, there was not so much need for strict compliance with the Referees' Notification. They freely admitted that the Gas Examiner had made a mistake; but it was a striking commentary on this submission that it was only during the continuance of the Emergency Regulations that these tests had not been made in the prescribed manner, and then only on three occasions. On all other occasions it had been the practice of Mr. Johnston to observe to the full the conditions laid down for gas testing. On this point all the Local Authorities were thoroughly satisfied. Similarly, the Local Authorities were fully in agreement that the Gas Company did everything in their power in order to give a good supply of gas, and, in fact, did give a good supply. He agreed that the reports should be annulled, and that the grounds of the decision should be communicated to the Local Authorities; but as to the costs, he expressed the hope that this phase of the matter would be considered very carefully indeed. If it had been proved that Mr. Johnston had deliberately falsified returns, he would deserve to be dismissed, and the Corporation of Wimbledon and the Urban District Council of Merton and Morden would deserve to have costs imposed upon them. That, however, was not the case. Mr. Johnston was a gentleman of high technical qualifications, who had misconceived, in a state of emergency, exactly what was required of him; and in these circumstances he asked the Chief Examiner to believe that no one regretted more than the Local Authorities what had happened. He hoped that, in view of the admission that had been made, the Chief Examiner would be as generous in his decision, and in any observations he might make upon the facts, as he felt he could be.

Sir Richard Glazebrook: I take it that you accept the Company's record book?

Mr. Emerson Smith: Yes, Mr. Johnston has no quarrel whatever with regard to the figures there.

Mr. Abady, referring again to the question of costs, said he had been instructed by the Company to say that, as the Town Clerk had indicated, the Company had always endeavoured to do their duty faithfully to the Local Authorities and the public, and had always been on very friendly terms with the Local Authorities. The matter of costs being within the discretion of the Chief Examiner, the Company placed themselves in his hands entirely. If he thought it would be a gracious thing on the part of the Company not to press for costs against the three Local Authorities with whom they were on such terms of amity, the Company would be perfectly content.

Sir Richard Glazebrook said he would consider the matter.

BRITISH GAS LIGHT COMPANY, LTD.

Annual General Meeting.

The Annual General Meeting of the Company was held on Wednesday, Sept. 29, at the London Offices, No. 2, The Abbey Garden, Westminster, S.W. 1—Mr. Henry Woodall (the Chairman of the Company) presiding.

The Secretary (Mr. A. W. Brookes) read the notice convening the meeting and the Auditors' reports; and the report of the Directors and the statement of accounts for the year ended June 30 were taken as read.

The Chairman, on rising to address the meeting, said: Ladies and Gentlemen,—It is a pleasure to meet you, and to be able to put before you the accounts now in your hands.

THE LATE MR. HENRY PULLMAN.

My first, and sad, duty is to refer to the death of our late colleague, Mr. Henry Pullman. Mr. Pullman was a Director for only five years, and during the period suffered much from illness; but he was always cheerful, and his wisdom and experience were freely given us. We greatly miss him. In his place we have elected the Hon. Clive Bigham, C.M.G., whose election we shall ask you to confirm later.

INCREASED PROFITS AT ALL STATIONS.

All our stations have earned increased profits during the year; the total of the increased profits being in round figures £76,000. Some of this is due to increase in price, some to increase in output; but increase in efficiency accounts for no less than £30,000—a figure which you will agree is highly satisfactory. The result is that, while last year we reduced our reserves by £18,023 and our carry-forward by £5205, this year we are able to add to our reserves £21,250, pay the usual dividend, and increase the carry-forward by £28,268. ["Hear, hear."] Had things been normal, we should have been able to reduce the price of gas.

Fortunately, when the mines closed-down we had at most of our stations rather unusually large stocks of coal; and we had every reason to expect that we should be able to carry on without purchase of high-priced foreign coal. In this we have been disappointed, with the result that we have had to raise the price of gas at all our stations (with the exception of Hull, where we had a specially large stock of coal), as from the 1st of October next. This extra charge we shall reduce as soon as possible; but with it we can reasonably expect to earn the comparatively small profit on our capital to which we are entitled. I have mentioned before that the total return on our capital is only just over 6 p.ct.

THE COAL DISPUTE.

I have very little to say about the coal dispute. The Book of Proverbs tells us that "in the multitude of counsellors there is safety." We have a more homely, and perhaps a truer, proverb that "Too many cooks spoil the broth." In disputes of this sort, the less intervention there is from outside, whether Government or any other, the better, and the sooner the dispute is ended. We can only hope that masters and men will come to an economic settlement which both regard as fair and honourable, as then only will this all-important industry be run on satisfactory lines, and coal be supplied at a price which will enable the other great industries of this country to compete in the world market. Public opinion is an important matter, and in this country is always in favour of fair dealing; and I look to this more than anything to produce a reasonable settlement.

ACQUISITION OF THE WYMONDHAM GAS-WORKS.

On the 17th of March last, the stockholders approved of an application being made to the Board of Trade for a Special Order authorizing an extension of the Company's limits of supply, the incorporation of the Wymondham undertaking, and the acquisition of other gas undertakings by agreement. An inquiry was held at Norwich on the 27th of July last by the Director of Gas Administration; and we are waiting the Board of Trade's decision in the matter. In the meantime, Wymondham has been connected-up with Norwich, and is now being supplied with gas in bulk from the city. If, and when, the Order is granted, we hope to connect-up from time to time other smaller undertakings and districts, as we have already done in the case of Wymondham, Wroxham, and Coltishall. The shortage of coal has shown one advantage our Order may be to the public. The difficulty of obtaining coal by small isolated works is great, and the larger undertakings are better able to meet such a strain as we are undergoing. I may say that we have had the pleasure of helping some of our smaller neighbours to keep their works going by supplying them with the small quantity of coal they require.

PENSION SCHEME.

You will see a reference in the report to the pension scheme. We are quite conscious of the liability the scheme involves, and are in close touch with our Auditors and our Actuary in the matter. The Court have been considering the promise made to the men; and this promise may not be given to future employees, though there is little doubt that the Company will be able and willing in the future to pay pensions out of revenue, while not accepting them as a liability. The Old Age Pensions have been increased since the inauguration of the scheme; and the Court feel that, now that pensions have become a part of our national life, it is unwise to bind the Company and our successors for all time to any hard-and-fast scheme.

POLICY OF EXTENSION.

I am able again to report good progress in our Swanage undertaking. Our investment there is proving a very sound one. This also applies to the Bradford-on-Avon Company. As you know, in the past we have lost some of our stations; and it is the policy of the Company to extend our business. Whenever we can see a promising investment, you may rely on our making it. Since I have had the honour to be Chairman of the Company, we have parted with the Potteries undertaking, though we obtained a very good price for it. Subsequently we have taken a controlling interest in the Swanage gas and electricity undertakings; we have purchased the Bradford-on-Avon Gas Company and the Wymondham Gas Company; and we have extended our Norwich mains to Wroxham and Coltishall. These are only small

concerns; but they are growing and paying well. With our sound organization, and being large buyers of coal and materials, we are in an excellent position to work either large or small undertakings economically; and we are always endeavouring to extend our sphere of influence. In this we are confident of your support.

HULL.

I will not weary you with details of the working at our various stations; but the results are all satisfactory, and no effort is being spared to improve them. At our chief station, Hull, we have just completed new stores and workshops, and have thus been able to bring the men under one roof, whereas before we had some outside shops which were not easily supervised. The expense has been heavy; but the savings will more than justify it. I must mention the Chief Clerk at Hull, Mr. William Lovatt, who is now 72. He completed 57½ years' service with the Company when he asked to resign; and we accepted his resignation with deep regret. He has been a good and faithful servant. We have made him a suitable retiring allowance; and we hope he may long live to enjoy it.

NORWICH.

At Norwich we have been doing important work in bringing together various departments in connection with distribution; and again the expenditure has shown an excellent return. Our new showrooms at Dereham Road are practically complete, and will tend to convenience and economy of working. You are probably aware that during the last 23 years we have twice had to rebuild the works at Norwich on the existing site. The cost of this has been heavy; and the Directors have most properly insisted that large sums out of revenue should be allocated to the replacements. In consequence, during long periods we have been unable to earn the interest we are allowed by Parliament. Until our Act of 1903, the unpaid interest was recoverable at any time; but by that Act deficiencies up to December, 1902, were recoverable, but any later deficiencies had to be paid within five years or be foregone. The total of the deficiencies at the end of June, 1925, was £71,835, but this year we have been able to reduce the figure to £60,014—a reduction of £11,821. The city will not grudge us this as we have already foregone £11,281, and may have to lose a further sum during the present half-year. I cannot conclude my reference to Norwich without mentioning that Mr. Thomas Glover, M.Inst.C.E., our Senior Engineer, has had the honour of being appointed Lord Mayor of this ancient city. His year of office is nearly over; and it has been a strenuous year for him. He has proved that some men can serve two masters; for I gather that he has carried out the duties of his high office to the satisfaction of his fellow citizens. He promised us that his civic work should not interfere with his duty to us; and his promise has been abundantly kept. You will, I think, agree that both we and Mr. Glover are to be congratulated on the great distinction conferred upon him. ["Hear, hear."]

THOROUGH CO-OPERATION.

With regard to our other stations, they have all done well, and are kept in a very efficient state. Such a report as I have been able to give you could only be brought about by thorough co-operation all round. This Company has the reputation, which we prize highly, of treating the staff and workmen well; and we certainly get good service. It would be invidious to mention any one department—all work together. We recognize we are public servants, and our success depends on giving good service; and that is the secret of the success of this undertaking. The task of your Directors is made pleasant and lighter by the admirable staff who work so well with, and for, them. Should there be any points upon which you require information, I will do my best to give it. I have much pleasure in moving the adoption of the report and accounts.

Major-General William T. Corrie said he had great pleasure in seconding the resolution. He had nothing to add to the statement of the Chairman, which had been most lucid.

There being no discussion, the resolution was put to the meeting and carried unanimously.

The Dividend.

The Chairman proposed that the payment by the Directors of the dividend at the rate of 7 p.ct. per annum, less income-tax, on the cumulative preference stock of the Company, as mentioned in their report, be confirmed.

Mr. Lewis R. Abbey-Williams seconded this, and it was agreed to.

The Chairman next moved that the payment by the Directors of the interim dividend at the rate of 3½ p.ct., less income-tax, on the ordinary stock, as mentioned in their report, be confirmed, and that a final dividend on the ordinary stock at the rate of 4 p.ct., less income-tax, making 7½ p.ct. for the year, be now declared; the same to be payable on Oct. 8.

Mr. Abbey-Williams seconded this, and it was passed.

Re-Elections.

The Chairman said it was with great pleasure he proposed the re-election as a Director of Mr. Harold G. Palmer. Mr. Palmer was well known to them all, as was his father before him. Mr. Palmer had asked him to express his deep regret that he was unable to be with them that day, but he was abroad; his visit having been delayed owing to the coal troubles. In normal times his visit to the Continent would not have interfered with the meeting; but it had had to be put off, and he had been compelled to keep the engagement. Mr. Palmer was a most active worker and a most useful member of the Court; and they would all wish him to continue his good work for the Company.

Mr. Graham Wilkin seconded this, and it was unanimously carried.

The Chairman proceeded to move the re-election as a Director of the Hon. Clive Bigham. Mr. Bigham, he said, was a Director of the Gas Light and Coke Company, and of other important undertakings. He had only been with the British Gas Light Company a very short time, but long enough for the Directors to appreciate him as a colleague, and to realize his usefulness.

Mr. Abbey-Williams seconded the motion, which was agreed to.

Moved by Lieut.-Colonel W. F. T. Corrie, and seconded by Mr. C. A. Morgan, it was resolved that Mr. E. Knowles Corrie and Mr. William Cash, F.C.A., be appointed Auditors of the Company until the next annual general meeting, and that their remuneration be such a sum as, after deducting income-tax for the time being chargeable thereon, shall be equivalent in the case of each of them to a net rate of £200 per annum.

Votes of Thanks.

Mr. Kenneth R. Mackay proposed a hearty vote of thanks to the Chairman, Directors, officers, and employees generally, for the services rendered by them during the past twelve months. This vote, he remarked, was thoroughly well deserved. In these troublesome times, when a great many important companies were paying no dividend, it was very gratifying to the proprietors in the British Gas Light Company to feel that they had a safe return on their investment.

Lieut.-Colonel Corrie seconded the resolution, which was cordially passed.

The Chairman, on behalf of his colleagues and himself, thanked the meeting for the vote so kindly proposed by Mr. Mackay and seconded by Lieut.-Colonel Corrie. He said that the work of carrying on the Company increased year by year, but year by year the works became more efficient, and the staff also; and the Directors felt satisfied that under normal conditions the British Gas Light Company would continue to prosper—they had faith in their product. The uses of gas were increasing almost daily; and in spite of serious competition from their friends the electricians, there was room for the greatly increased development of both forms of light and heat. They all knew how very much they owed to their staff and workpeople. The Company were thoroughly well served in all departments. The pension scheme, of which the proprietors had been good enough to approve, was now in operation, and quite a number of men were already receiving this pension. Their fellows still at work knew of this fact, and appreciated that service with this Company did not end when their period of work was over, but that they were looked after beyond that time. He felt sure that the effect was altogether good. He would ask Mr. Brookes, their highly-respected Secretary, to reply on behalf of the staff, and as Mr. Thomas Glover was also present, they would like to have a few words from him. Next year Mr. Brookes would enter his fiftieth year of service with the Company. It was a matter of pride to the Directors that their staff hardly ever left them. The proprietors knew the Directors distributed medals to their men after 25 years' service; and they would be interested to learn that since 1912, when the medals were instituted, no less than 392 had been distributed among Directors, staff, and workmen. The Directors served them long, as well as the staff and workmen.

Mr. Brookes said it was a great pleasure to him to acknowledge the vote, and it would be a still greater pleasure to convey it to all those concerned. The Chairman had told them how well the staff and all the employees were working together; and he (the Secretary) was glad to have the opportunity of testifying to the assistance which was rendered to him by his own staff, and to the zeal with which their work was performed.

Mr. Thomas Glover remarked that he regarded it as a great privilege to be among them that day, and to take part, as their Senior Engineer, in the acknowledgment of this vote. The engineers, staff, and workmen were all devoted to the Company's service, and thoroughly appreciated the kindly treatment they received. Speaking for the engineers, they were only too delighted when they were able to assist the Company to higher efficiency in working, and to help in the newer enterprises which were being undertaken by the Company. It was quite right that the Company should seek new fields for their service, and connect up the smaller and less efficient undertakings which were within reach of their large and efficient works. He felt sure the shareholders would back-up the Board in such enterprises. With reference to the serving of two masters, he did not altogether agree with the Chairman's remarks. He was really only doing a little more intensely what the Company had been doing for a great many years. The Company had been serving the Norwich public to the best of their ability for a long time past, and were highly regarded in that city; and he was merely seeking to make this regard a little greater even than in the past—though there was not much room to do that. He took it that it was because the Company were so highly regarded that he had been honoured by appointment to an office which he trusted he had filled without disadvantage to the Company or to the citizens of Norwich.

This concluded the proceedings.

WELDING MISHAP AT FOLKESTONE.

Repairs were being carried out to one of the seams of a gasholder of the Folkestone Gas and Coke Company by electric welding, when, owing to an escape, the gas became ignited. There was little gas in the holder at the time, but to avoid any possibility of danger, the Fire Brigade were called to assist by keeping the plates cool; and in the course of something under an hour the trouble was under control. The damage to holder and loss of gas did not exceed £50.

A correspondent writes: "In view of the widespread publicity given by the Press to the accident to one of the gasholders at Folkestone last week, I think it is only right that it should be known that no recognized gasholder builder was engaged on the work."

Sale of Gas Shares.—Messrs. H. King & Son sold at Stourbridge recently the following gas shares: £250 7 p.ct. redeemable stock in the Dudley Gas Light Company, £112 per £100 stock; 41 5 p.ct. preference shares of £30 each in the same Company, £26 each; 19 "B" shares of £10 each in the Brierley Hill Gas Light Company, £11 15s. each; and in the same Company, 28 "C" shares of £10 each, £11 10s.; 12 shares (1866) of £10 each, £12; £117 7s. 3d. original stock, £192.

CONTINENTAL UNION GAS COMPANY.

Ordinary General Meeting.

The Ordinary General Meeting of the Company was held on Tuesday, Sept. 28, 1926, at Winchester House, Old Broad Street, E.C.—Colonel H. LEROY-LEWIS, C.B., C.M.G., D.S.O., in the chair.

The SECRETARY (Mr. Arthur Nops) read the notice convening the meeting and the Auditors' report; and the report of the Directors and the statement of accounts were taken as read.

The CHAIRMAN: Ladies and Gentlemen, I should like to say, before dealing with the business of our Company, that Sir George Touche is unfortunately absent from the meeting to-day, because he is still recovering from a long and serious illness. I am happy to say, however, that he is going on well, and hope he will be among us again shortly. Sir Henry Birchenough is taking a short and well-earned holiday. He has been very busily engaged in most important negotiations in the City; and I do not think we can grudge him the sunshine he is now seeking in Italy. I move that the report and accounts be received and adopted, and propose to make a few observations on them; then, if anybody wishes to ask questions or to have any elucidation from the Board, they will have an opportunity to address the meeting.

MEETING AND DIVIDEND DATES.

As this is only the second occasion on which our annual general meeting has been held in September, I may perhaps be excused for referring again—I hope for the last time—to the change in our habits. I am induced to do this by the receipt of a number of letters in our office last January—and even in July—from stockholders, inquiring why they have not received their dividend cheques. These proprietors evidently had the idea fixed in their minds that January and July were to be perpetually our dividend-paying months—in spite of the receipt by them of cheques in October and April last year; and it is for their benefit that I repeat that the reasons which enable us to hold our meetings in September also enable us to send out our dividends in October and April. I explained the why and wherefore of this in my speech last year; and I hope that this brief reference may serve to persuade all our stockholders that any dividends they may have to come from us will reach them in April (for the interim) and October (for the final)—*i.e.*, three months sooner than has been customary.

THE ACCOUNTS.

If you will turn to the accounts, of which copies are in your hands, you will notice that the first item—"Management, General Charges, &c."—to the debit of profit and loss account show an increase of £1000. The total of £4348 is made up of Directors' fees £2500, Auditors' fees £105, pensions £50, that proportion of the general office expenses, salaries, rent, &c., which is not borne by the Union des Gaz, &c., £1743. It will be admitted that, for the administration of a Company with £1,000,000 capital, these charges still remain extremely low. The whole of the increase under this head is due to the fact that the Board are now receiving the full amount of remuneration to which the Articles of Association entitle them. Some of you may remember that during the war period, and while no ordinary dividend was being paid, the Directors consented to give their services at a much reduced fee. They have on more than one occasion been urged by proprietors in the body of the hall at these general meetings to accept the full amount to which they are entitled. The Board, however, considered that, so long as the ordinary stock paid no dividend, the figures of the Directors' fees should remain reduced. Now, however, that it has been possible, after a lapse of ten years, to renew payment on the ordinary stock, the Board are of opinion that they need no longer insist on accepting reduced fees, in face of what the proprietors have themselves urged. The Board were also influenced, in their decision to accept their full remuneration, by the fact that their fixed fees in francs from the Union des Gaz have remained unchanged. With the franc at its recent value, these franc fees became a very inconsiderable amount when converted into sterling. The next item, "Provision for Taxes," also shows an increase. This may be considered at first sight rather an anomaly, in view of the fact that those of our dividends received, which have not been taxed at source, show a decrease on the corresponding figure of last year. This apparent anomaly is due to the fact that at the beginning of last year there was a certain provision in hand (provision having been made the previous year on the basis of a 4s. 6d. tax), but the round figure of £4000 put aside last year was sub-normal, and fell a little short of covering in full our liabilities. The £4300 provision made this year fully covers our liability for income-tax on all receipts to June 30, 1926, which have not suffered deduction of tax at source. It may now be stated that there will in all probability be a considerable surplus available in this provision. You are aware that in the last budget it was decided to abolish the three years' average basis, on which our receipts from the Union des Gaz were assessed. The change-over to the new method will mean that we shall only have to pay next year on the amount of our receipts last year—a figure which is considerably less than the total which would be liable under the old system. The details of the new arrangement, however, were not available until these accounts were prepared and passed, so that we had no alternative but to proceed upon the old lines in making our provision. It cannot be claimed that the change in the basis of assessment will be of any great relief to the Company in the long run, though our liabilities in the immediate future may be somewhat less than was anticipated. Not only are these liabilities fully covered, but we have the satisfaction of knowing that there is an ample margin on the safe side—a margin which it is safe to have in view of the almost inevitable increase of taxation in the near future. The next item is "Exchange Reserve." Pursuing their policy of gradually building-up a fund to counteract depreciation in our French investments, the Board have set aside out of the year's profits the sum of £3000—as against £6000 last year. I will refer to this reduction later, when I am dealing with our dividend proposals.

PROFIT AND LOSS ACCOUNT.

On the credit side of the profit and loss account, dividends and interest received a total of £28,342—unfortunately a considerable amount less than last year's figure. This fall is entirely due to the course of the French exchange, about which I shall have something to say later. Income-tax refund and sundry receipts both show a small decrease. The balance of profit and loss account, £17,384 12s. 2d., is carried down, and figures in the detail shown on the balance-sheet. Here I may mention a slight alteration in the form of presentation of our accounts which we have just adopted. Hitherto we have always opened the profit and loss account with the carry-forward from the previous year. Now the profit and loss account shows the actual result of the working year without any help in the shape of a carry-forward. The result of the year, and the previous carry-forward, are both items in the detail of the profit and loss account shown below on the balance-sheet.

BALANCE-SHEET.

If you will now turn to the figures on the balance-sheet, capital, of course, remains unaltered. Sundry creditors and credit balances, at £40,885, show an increase of £5600 over last year—an increase which is explained by the £3000 added to the reserve exchange account, and the increase in the amount of the credit accumulated to meet eventual demands for income-tax payments. Leaving for a moment the balance of the profit and loss account, the other side of the balance-sheet shows an increase of nearly £4000 in the amount of our investments. This is accounted for by the investment of sums placed to exchange reserve. It may be noticed that the proportion of gas to general investments shows an increase. You will remember that last year I gave a full explanation of the scheme then in course of completion for the reorganization of the capital of the Union des Gaz, in which we are so largely interested. We, the Continental Union Gas Company, had been invited to subscribe for a portion of the balance not taken up of their new issue. As we had at that time some 2½ million francs available, an accumulation derived from repayment of capital, temporarily invested in French Treasury Bonds, it appeared to your Directors that here was an excellent opportunity for the useful employment in an industrial concern of this money, which, if remaining in Government stock, was entirely at the mercy of exchange fluctuations. The opportunity was seized, and the result is that some £52,000, which, as French Treasury Bonds, figured among the general investments, are now transferred to the total of our gas investments. Cash at bankers, loans, &c., at £12,227, are considerably less than last year, when we had a rather large sum available and awaiting investment. The item of "Sundry Debtors" consists of a nominal amount of £15 representing office furniture.

THE DIVIDEND.

Returning now to the profit and loss account, you will see that of the £25,744 to the credit of this account on June 30, 1925, £23,438 has been paid out in dividends. To the balance of £2306 has been added the profit for 1925-26, £17,385, making a total to be dealt with of £19,691. An interim distribution of 3½ p.ct., less tax, was made in April last, on the preference stock, absorbing £5600, and leaving a total now available of £14,091. The Directors now propose paying a further 3½ p.ct., less tax, on the preference stock (making 7 p.ct. for the year), and also recommend a payment of 1 p.ct., less tax, at 4s., for the year on the ordinary stock. These two payments require £12,000—leaving £2091 to be carried forward to next year. It is a matter of extreme regret that it has not been found possible to maintain the distribution of 2 p.ct. on the ordinary stock which was made last year. When we recommended that dividend, we had every confidence that there would be no looking back—that the 2 p.ct. was a modest and certain step towards a return to full prosperity. But our old bogey of exchange stepped in. The amount received in francs from our French investments was practically the same as last year, although we only had the normal two distributions instead of the abnormal three of 1924-25. But as the rate of exchange soared during 1925-26 from 108 frs. to the pound to 174, it is only by reducing the amount allotted to exchange reserve that the Board have been able to recommend a meagre 1 p.ct. While the policy of building-up this exchange reserve is still believed in, there was no very strong reason why the £6000 figure of last year's allocation should be adhered to. It was considered that the general opinion of the proprietors would be in favour of paying a 1 p.ct. dividend, even at the expense of a reduction in the amount passed to exchange reserve.

FRENCH EXCHANGE.

With regard to the French exchange, I have, I am afraid, proved a poor prophet in the past. I shall not venture to indulge in any more prophecies, but shall only ask you to live in hopes. It cannot be feared that a country which, like France, numbers its unemployed only by the hundred, and is practically self-supporting in the necessaries of life, is in danger of financial collapse. Internationally, her credit is poor; internally, she is extremely flourishing. The means of balancing her budget and re-instating her credit are there; what is required is an Administration strong enough to take the steps necessary to reorganize her fiscal system and the operation thereof in such a manner that the internal prosperity of the country may be reflected in the international status of the franc. The Frenchman is renowned for his thrift; but his outlook is sometimes not sufficiently broad. So long as his crops are good, and he has not to buy his food abroad, the question of exchange is much less important to him than it is to the Englishman, who always has to pay foreign countries for his bread. This, no doubt, in part explains why it is so extremely difficult to convince him that a personal accumulation of wealth will continue to

diminish in value unless he faces the broader issues, by submitting with a good grace to the necessary taxation, thus enabling the Government of the country to re-establish the value of their monetary unit. Abandoning, meanwhile, my rôle of prophet, I feel on safer ground in submitting to you some figures which show the effect which the course of the French exchange has exercised over the affairs of the Continental Union Gas Company during the last five years. Since June, 1921, when the Union des Gaz first resumed dividend payments after the war, we have received in dividends and interest on our French investments nearly 8⅛ million francs. These francs translated into sterling at gold parity would give some £340,000; the amount in pounds which we actually received, at rates varying from 60 to 170, is just under £90,000. Thus the loss on exchange over five years means to us a loss of no less than £250,000, or more than sufficient in itself to pay a dividend of 6 p.ct. on our ordinary stock over the whole period. The future of the French franc is a mystery which remains on the lap of the gods. One thing is certain—at some period or other it will be stabilized at some figure. This could be done immediately if any French Government had the pluck to use the two hundred odd million sterling of gold which at the present moment are lying idle in the vaults of the Bank of France. They have only to say that a certain amount of gold will be handed out to any person who produces a certain number of paper francs, and the stabilization of the franc will be effected. It will require pluck to carry this out; but this kind of financial courage does not seem to be characteristic of the governing class in France at the present moment. Still, the time must come, and cannot be long delayed, when the stabilization of the franc will take place. When this is effected, we shall then know where we are, and shall be able to present to the proprietors a scheme for making our capital concordant with the dividend-paying capacity of our Company.

SOUND CONDITION OF THE UNION DES GAZ.

I hope that the stockholders of the Continental Union Gas Company will not regard this conclusion in a too pessimistic way. The principal asset in our capital account is our holding in ordinary shares of the Union des Gaz. It is true that this holding is expressed in francs; but it must not be forgotten that these paper francs have been translated into mains, works, gasholders, land, and all the other adjuncts necessary for the carrying on of a gas business. These assets are gold values, and have an earning capacity which must sooner or later be expressed in terms of gold. The condition of the Union des Gaz is sound; its dividend-earning capacity is unimpaired; and there is no reason why, when our capital account has been re-organized and made to concord with the facts of the present time, the Continental Union Gas Company should not once again be able to pay a fair rate of interest to its proprietors.

The Right Hon. Lord Wargrave, P.C., formally seconded the motion for the adoption of the report and accounts; and it was carried unanimously without discussion.

Re-Elections.

The Chairman moved that the retiring Directors (Sir George A. Touche, Bart., and Sir James F. Remnant, Bart., M.P.) be re-elected. He said that there was a very salutary rule in their Company that members should not indulge in any praise of one another. He did not intend to break through this rule in proposing the re-election of these gentlemen, who had done yeoman service for the Company in the past, and he had no doubt would continue to do so in the future.

Lord Wargrave seconded this, with the remark that he was sure they were all deeply gratified to hear the news the Chairman had given them with regard to the recovery of Sir George Touche, whose services to the Company were invaluable. Sir James Remnant's good work was also well known to them all.

The Auditors (Messrs. C. P. Crookenden, F.C.A., and G. A. Cave-Orme, J.P.) were thereafter re-appointed, on the motion of Mr. R. J. F. Remnant, seconded by Mr. A. G. Morrish.

Votes of Thanks.

The Chairman proposed that the best thanks of the meeting be accorded to the staff, both in London and abroad, for their services during the past year. The Company were, he observed, very loyally served in this country by an extremely small staff; and he felt certain that the stockholders derived all the information they could, if they applied at the offices of the Company. So far as the Directors were concerned, they were more than satisfied with the services rendered, and could not possibly wish to have a more efficient or more loyal body of men.

Mr. S. H. LeRoy-Lewis seconded the motion, which was heartily passed, and suitably acknowledged by Mr. Nops.

Mr. Crookenden proposed a hearty vote of thanks to the Board, and especially to the Chairman for his highly interesting speech, which those present would not have missed on any consideration.

Mr. Morrish seconded the vote, which was acknowledged by the Chairman.

ALLIANCE AND DUBLIN CONSUMERS' GAS COMPANY.

Half-Yearly Meeting.

The Half-Yearly Meeting of the Company was held in the offices, D'Olier Street, Dublin, on Wednesday, Sept. 29—Mr. F. J. Dickins (the Chairman) presiding.

The Chairman, in moving the adoption of the report and statement of accounts, said it was very gratifying to be able to call attention to, and emphasize, the satisfactory nature of the figures submitted for consideration, and to congratulate them again on the steady improvement in the affairs of the Company. During the past half-year there had been once again a remarkable increase in the sales of gas, amounting to upwards of 76 million c.ft., equivalent to 9 p.ct. If they took the complete year ended in June last, the increased business amounted to 134 millions. Another satisfactory feature was the marked diminution in the quantity of gas unaccounted for. It was also a pleasant duty to report that the demand for further gas supplies was still increasing. During the half-year they had secured 2055 new consumers; and it had become a difficult matter to cope with the increased work in the distribution department, as all descriptions of gas apparatus were in request—particularly those required for cooking and heating. In the six months there were fixed 1993 new cooking and 540 further heating stoves. The returns from the works showed that the make of gas per ton of coal was considerably better than that of any previous half-year—disclosing, in fact, an improvement of more than 50 p.ct. on pre-war results. This appeared to him to justify, in a very ample manner, not only the installation of vertical retorts, but the entire revenue expenditure incurred in bringing all plant and equipment up to the highest standard of efficiency. They had recently completed the installation of five purifiers, capable of effectively purifying 2½ million c.ft. of gas per day; and their condensing plant had been augmented by three units of condensers, with a combined capacity of 4 million c.ft. per 24 hours. It had been felt for a long time past that their laboratory accommodation was inadequate to deal with what was, after all, largely a chemical business; but they had now remedied this by the erection of a substantial chemical and physical laboratory. For the treatment of tar the plant had recently been greatly improved by the installation of a 25-ton still, complete with condenser tank and cooling coils.

The capital expenditure was heavy; but this must be taken as a healthy sign, indicating, as it did, to a large extent, the rapid extension which was taking place in the Company's business.

The cost of coal and oil was down by over £10,000, though 10 p.ct. more was carbonized. The explanation lay in the fact that large quantities of oil were saved by curtailing the manufacture of carburetted water gas. Moreover, up to June 30, none of the costly American coal had been received, as they were able to continue working on the substantial stock which they had considered it prudent to accumulate prior to the miners' strike. On the income side, increased sales of gas had swollen net receipts by £17,000 in the half-year. The balance of net revenue available, after meeting debenture and bank interest, was sufficient to meet the dividend recommended of 6¼ p.ct.—which was the maximum permissible under the sliding-scale provisions—and leave the substantial balance of £34,765 to be carried forward. The balance-sheet disclosed once again a satisfactory state of affairs. He was glad to say that, encouraged by the enhanced popularity of gas and the largely increased sales, consumers were notified that a reduction of 1½d. per therm, or 5⅝d. per 1000 c.ft., would take effect as from the reading of the meters for the June quarter. Both the consumers and the stockholders were now reaping the benefit of the large sums which had been spent upon modernizing and perfecting equipment.

The motion for the adoption of the report and statement of accounts was seconded by Mr. W. Newbigging, and agreed to unanimously.

On the motion of the Chairman, seconded by Mr. J. X. Murphy, a dividend was declared on the consolidated ordinary stock of the Company at the rate of 6¼ p.ct. per annum, less income-tax.

Mr. G. W. Norman moved a cordial vote of thanks to the Directors and staff, and spoke in high terms of the keen devotion to duty that marked the control of the concern.

The Chairman acknowledged the vote on behalf of the Directors, and Mr. W. J. Grey (Secretary and Accountant) returned thanks for the staff.

NEW CLUB ROOMS AT PORTSMOUTH.

Gas Company's Social and Athletic Club.

On Sept. 30, the employees of the Portsmouth Gas Company were shown further proof of the great interest taken in their welfare by the Directors of the Company, when the Chairman, Mr. T. H. F. Lapthorn, opened their new club-rooms situated at the rear of the Company's head offices in Guildhall Square.

At an extraordinary general meeting which preceded the ceremony, Mr. T. Carmichael, the Company's Engineer, said he hoped the employees appreciated that, in providing these premises for the use of the members of the Social and Athletic Club, the Directors had incurred considerable expense. He asked all of them to support the various activities of the Committee, to show appreciation of the Directors' generosity.

The Chairman, in declaring the rooms open for the use of the employees, warmly congratulated them on the spirit of goodwill existing between them and the Directorate, and spoke with confidence of the progress to be expected in the industry when such cohesion existed between master and man.

Mr. H. Stibbs, the Secretary of the Company, and one of the Vice-Presidents of the Club, expressed the gratitude of the members to the Chairman and his co-Directors for providing the Club with so fine a home for their social and athletic activities. He assured them of the members' grateful appreciation. His remarks were endorsed by Mr. P. Hayward, Chairman of the Management Committee, and supported by Mr. Flynn (Hilsea Works).

Kenilworth Gas-Works Purchase.—The Coventry Corporation propose to purchase the undertaking of the Kenilworth Gas Company at the price of £38,500. It is probable that eventually the Foleshill undertaking will supply the whole of the Kenilworth area.

AUSTRALIAN GAS LIGHT COMPANY.

Annual Meeting.

The Eighty-Seventh Annual General Meeting of the Company was held on Aug. 12—Mr. GEORGE J. COHEN, Chairman of Directors, presiding.

The CHAIRMAN, in moving the adoption of the report, said that the progress made by the Company during the past year had been satisfactory, being on a par with the average progress made during the preceding five years. During the year, 10,786 additional consumers were supplied with gas; the total number of consumers on the Company's books at the end of the year being 211,843. The quantity of gas sold was 6,387,591,000 c.ft.—an increase of 249,042,000 c.ft., or 4 p.ct., over the preceding year. The business of the Company gave every promise of continuing to increase; and as provision for coping with development had to be made well in advance, the Directors had decided to raise further capital to provide additional plant. On Nov. 23, 1925, 40,000 new "A" shares were sold by auction. The average price realized was £6 13s. 9½d., which the Directors considered indicative of the confidence which the investing public reposed in the Company.

The gross profit made during the year, after providing £130,000 as a contribution to the special purposes fund, was £355,480; and the net profit, after providing for interest on debentures and loans, was £259,169. Dividends for the past year at 8 p.ct. per annum will absorb £261,109, as compared with £237,752 for the previous year. The sum to be carried forward to the next year's accounts was £27,112, compared with £29,053.

Considerable developments had taken place during the past year in the use of gas for industrial purposes in Sydney. At present 76 trades were using the Company's gas for industrial purposes; the number of consumers being 902. These consumers used 293 million c.ft. of gas during the year; the increase in consumption over the preceding year being 29 p.ct.

The motion, which was seconded by the DEPUTY CHAIRMAN, Mr. S. H. Cary, was put to the meeting, and carried unanimously.

GAS REGULATION ACT APPLICATIONS.

There have appeared in the "London Gazette" the following notices regarding applications to the Board of Trade under the Act.

AMENDING ORDERS.

Horsham Gas Company, Ltd.

To increase the price of gas from Sept. 30 for a period of six months from the maximum price of 17d. to 19d. per therm.

Poulton-le-Fylde Urban District Council.

To increase the price of gas from Oct. 4 for a period of nine months from the maximum price of 13d. to 17d. per therm.

South Suburban Gas Company.

To substitute until June 30, 1927, a standard price of 12·2d. per therm for the existing standard price of 10·8d. per therm.

Syston and Thurmaston Gas Light and Coke Company, Ltd.

To increase the price for a period of six months from 1s. 3d. to 1s. 6d. per therm.

DECLARATIONS OF CALORIFIC POWER.

Annfield Plain and District Gas Company.—450 B.Th.U., in place of 425 B.Th.U. (Jan. 1, 1927.)

Bungay Gas Light and Coke Company.—450 B.Th.U., in place of 360 B.Th.U. (Jan. 1, 1927.)

GAS REGULATION ACT ORDERS.

We have received from the Director of Gas Administration copies of the following Orders made by the Board of Trade under section 1 of the Gas Regulation Act.

Ashburton Urban District Council.

During the period from the date of this Order until June 30, 1927, section 3 (maximum price) of the Ashburton Gas (Charges) Order, 1924, shall be read as if the word "nineteen" were substituted therein for the word "sixteen." (Sept. 23.)

Bordon and District Gas Company.

During the period from the date of this Order until June 30, 1927, section 3 (maximum price) of the Bordon and District Gas (Charges) Order, 1922, shall be read as if the words "twenty-two decimal four" were substituted therein for the words "nineteen decimal four." (Sept. 27.)

East Retford Corporation.

After the declared date (Sept. 22), the maximum price in respect of gas supplied by the undertakers shall be 15d. per therm.

Wandsworth, Wimbledon, and Epsom District Gas Company.

During the period from the date of this Order until June 30, 1927, and notwithstanding anything in the Wandsworth, Wimbledon, and Epsom District Gas (Charges) Amending Order, 1925, section 3 (standard price) of the Wandsworth, Wimbledon, and Epsom District Gas (Charges) Order, 1921, shall be read as if the standard prices therein authorized were fifteen and three-fifths pence per therm and thirteen and three-fifths pence per therm respectively. (Sept. 22.)

In spite of the great advance in cost of coal, the Sowerby Bridge Urban District Council have so far retained the price of gas at 2s. 3d. (net) per 1000 c.ft.

INCREASES IN THE PRICE OF GAS.

Further Results of the Coal Stoppage.

The Abergele Gas, Coke, and Water Company have increased the price by 10d. per 1000 c.ft., making it 7s. 6d. per 1000 c.ft.

The Barnoldswick Urban District Council have decided to reduce discounts. The net price (after allowing a discount of 3d. instead of 5d.) will be 3s. 7d. per 1000 c.ft., instead of 3s. 4d. The gross price remains at 3s. 9d. On slot meter supply, the discount is reduced from 6d. to 2d., making the net price 4s. instead of 3s. 8d.

The Barrow Gas Committee recommend an immediate increase of 6d. per 1000 c.ft.

At the second time of asking, the Belfast Gas Committee succeeded in carrying an increase in the price of gas. At the beginning of September, the Council, after a keen debate, turned down a recommendation from the Committee to increase the price to ordinary consumers from 2s. 4d. to 2s. 8d. per 1000 c.ft., and to give prepayment consumers 28 c.ft. per 1d., instead of 30 c.ft. The Committee at their next meeting re-affirmed their previous resolution, and again sent forward the recommendation; and at the October meeting of the Council, after another spirited discussion, the increase was carried by 27 votes to 16. Councillor M'Laurin, Chairman of the Gas Committee, said that on May 1 the coal sheds at the gas-works were packed full of coal, and it was estimated by the Manager that he had at least two months' stock. Contract coal out of stock was used in May, but early in June, as the strike still continued, he was forced to buy foreign coal to augment the rapidly dwindling stocks; and thus the working costs for June were considerably increased. In July, August, and September, much larger quantities had to be bought at gradually rising prices; and the total actual cost incurred up to that day amounted to £37,797. Owing to the continuance of the strike, they had now had to cover themselves for the months of October and November, and this would involve a proportionate increase of that amount. The proposed increase, while absolutely necessary to safeguard the finances of the Department, would prove only a small item for the individual consumer.

The Brighouse Town Council, on Sept. 29, approved an increase in the price by 1d. per therm.

The Camborne Gas Company have increased the price by 3d. per 1000 c.ft.

The Colchester Gas Company have found it necessary to announce increases of 1d. per therm—to 1s.—to take effect as from the current reading of the meters.

The Coleraine Urban Council, by seven votes to three, decided to increase the price of gas from 4s. 2d. to 5s. 10d. per 1000 c.ft., a rise of 1s. 8d.

The price at Congleton has been increased by 6d. per 1000 c.ft.

The Cradley Gas Company have advanced the price by 1·4d. per therm.

The Crowle Gas Company have had to advance the price to 9s. per 1000 c.ft.

The Deal and Walmer Gas Company announce an increase of 1·6d. per therm, as from the meter readings at the end of the Michaelmas quarter, to all classes of consumer.

The Elland-cum-Greetland Gas Company have been compelled to increase the price by 2d. per therm.

The following notice has been circulated by the Gas Light and Coke Company: In view of the cessation of "Summer Time" and the approach of winter, the Gas Light and Coke Company wish to impress upon their consumers the necessity for strict economy in the use of gas during the present coal stoppage. The Directors regret to announce, at the same time, that the price of gas will be immediately increased by 1d. a therm. The Company, in order to maintain supplies of gas, have been compelled, since the last increase in the price of gas was announced at the beginning of August, to purchase large quantities of coal at increasingly high prices; and this has made the further increase in the price of gas inevitable. Consumers may rest assured that the price will be reduced as soon as circumstances permit.

The Goole District Council have increased the price by 6d. per 1000 c.ft.

The Gosport District Gas Company have given their consumers notice of an increase in the price by 1½d. per therm. In Gosport the charges are being raised from 10·8d. to 12·2d., in the urban district of Fareham from 13·6d. to 15d., and in other parts of the Company's district from 12d. to 13·4d. per therm.

The Gas Committee of the Ilkley District Council have increased the price from 10½d. per therm to 1s. 2d., from Oct. 1.

The Directors of the Jedburgh Gas Company have resolved to increase the price of gas by 10d. per 1000 c.ft., making the rate 7s. 1d. Owing to the high price the Company have been paying for imported coal, the manufacture of gas for some time past has been carried on at a considerable loss.

The Keighley Town Council are asked by the Gas Committee to increase the price, as from Jan. 1, 1927, by 6d. per 1000 c.ft. The increase will bring the price to 3s. 3d. per 1000 c.ft.

The Lancaster Corporation Gas Department have been forced to increase the price by 7d. per 1000 c.ft., from the September meter readings—making the charge 3s. 6d. per 1000.

The Llandudno Council have decided to increase the price by 6d. per 1000 c.ft.

The Longridge Gas Company have decided to increase their price by 2½d. per 1000 c.ft., to take effect from Sept. 30.

The Directors of the Minehead Gas Light and Coke Company announce an increase in the price of gas by 3d. per 1000 c.ft., making it 4s. 9d. per 1000 c.ft.

The Montrose Gas Company have raised the price by 10d. per 1000 c.ft.—the increase to take effect from the next meter readings.

The Directors of the Okehampton Gas Company announced last Thursday that they had been compelled to increase their charges to 6s. 8d. per 1000 c.ft. to ordinary consumers, subject to a discount of 5d. The charge to prepayment customers was altered to 12 c.ft. per 1d.

Gas has been increased in Oswaldtwistle 1d. per therm. One-half the street lamps in the town are being lighted pending the settlement of the dispute.

The Pitlochry Gaslight Company have decided to increase the price from 6s. 8d. to 7s. 6d. per 1000 c.ft.

The Portsmouth Gas Company have given notice of an increase in the price, as from Oct. 1, of ½d. per therm. The revised price to ordinary consumers within the city boundary will be 8½d. per therm.

In the Poulton Urban District Council, Mr. Poole (the Chairman of the Gas Committee) said they had decided to increase the price by 3d. per therm. It was stated that they had applied for powers to increase the price 4d. per therm, because no one knew how long the strike would last, or what price they would eventually have to pay for coal.

The price is being raised at Preston by 2d. per therm.

A special meeting of the Radcliffe and Little Lever Joint Gas Board was held at the gas offices on Wednesday, Sept. 22, to consider the price of gas, owing to the heavy charges which were having to be met. A statement was exhibited by the Clerk, showing that the additional cost for coal alone will be approximately £7000, although there was more than three months' stock in hand at the commencement of the dispute. It was resolved that the price be increased 1d. per therm (or 4·8d. per 1000 c.ft.), as from the reading of the meters at the end of the present quarter, to all ordinary consumers, and that the rebate allowed to prepayment consumers be reduced to 4d. per 1000 c.ft.

The Redcar Corporation have had to reduce the discount from 20 to 5 p.ct.

The Skipton District Council last week approved an increase in price, as from Oct. 1, of 6d. per 1000 c.ft.

The Smethwick Town Council have decided to increase the price of gas supplied through the ordinary meter by 6d. per 1000 c.ft., and through prepayment meters by 5d. per 1000 c.ft.

An increase of 1d. per therm, making the price 10½d. per therm, is announced by the South Metropolitan Gas Company.

The Directors of the South Shields Gas Company have raised the price by 3·8d. per therm for the last quarter of the year.

The Southport Corporation Gas Committee propose to increase the price by 3d. per 1000 c.ft.

The Spenborough Gas Committee have increased the price, as from the meter readings after Sept. 30 to all consumers except those with prepayment meters, by 1d. per therm. The discount to slot meter users will be 1d. in the shilling, instead of 2d. as at present.

Thirsk gas has been increased in price by 3½d. per therm to ordinary consumers, and the amount supplied to prepayment consumers has been reduced to 12 c.ft. per 1d.

The price at Tipton has been increased by 3d. per 1000 c.ft.

The Todmorden Corporation Gas Committee have advanced the price by 3½d. per 1000 c.ft.

Subject to the approval of the Wallasey Council, the charges are to be increased, from Oct. 1, by 4d. per 1000 c.ft.—from 3s. to 3s. 4d.

The price at Warrington has been raised by 6d. per 1000 c.ft.

The price at Wigan has been increased by 1s. per 1000 c.ft., bringing it to 4s. 6d. per 1000 c.ft. for heating, cooking, and power, and 4s. 10d. for lighting.

CONTRACTS OPEN.

Purifiers, House, Machinery, &c.

The Gas Department of the City of Stoke-on-Trent last week invited tenders for the supply of purifiers, house, machinery, &c. [See advert. on p. 906 of last week's "Journal."]

EXTENSIONS.

Carbonizing Plant at Bangor.

The Bangor Urban Council are inviting tenders for the erection of a new bench of retorts.

Carbonizing Plant for Llandudno.

The Gas Committee of the Llandudno Urban District Council have had before them a report prepared by the Gas Manager on the carbonizing plant, and have decided to recommend that the first portion of the scheme be proceeded with, and that tenders be invited for the supply and erection of all material for a steel-framed brick retort house, with foundations containing four settings of ten retorts, five tiers high, on stage floor, complete with stoking machine, coal storage, hoppers, belt conveyor, mechanical means for handling coke discharged from retorts, and waste-heat boiler. Mr. Davies (the Chairman of the Committee) said the Committee intended to invite two or three large firms to draw out plans on the lines of the Manager's report. The Council agreed to the recommendations.

Curtailed Supply at Kingsbridge.—The Kingsbridge (Devon) Gas Company announce that they have only sufficient coal for another three weeks, and that, being uncertain of a further supply, they are compelled to cut off the gas supply to consumers except from 7.30 to 8.30 and 11 to 1 in the morning, and from 4.45 until 5.30 and 6.30 to 9.30 at night.

TRADE NOTES.

A Useful Calendar.

We have received from the Thames Bank Iron Company a useful standing desk calendar. On the front is the new London address of the Company: Lodge Road, St. John's Wood, N.W. 8.

"Hailglass-Ware."

This is the title of a new list published by Messrs. Ackroyd & Best, Ltd., of Morley. The globes and shades, which are illustrated most attractively in colour, are of really beautiful design. The range of articles included in the catalogue is both wide and varied.

Davis Gas Grates.

The Davis Gas Stove Company, Ltd., have published a new gas-fire booklet of a most attractive nature. The illustrations of their "armoured" fires are particularly pleasing. These fires represent a new idea. The frames are covered with the actual metal; and the effect is excellent.

Ellison & Mitchell, Ltd.

Intimation is made to their clients by Messrs. Ellison & Mitchell, Ltd., of Kilnhurst, near Rotherham, that as from the 1st inst. their interests as tar distillers in Yorkshire have been transferred to Yorkshire Tar Distillers, Ltd. The business will be carried on under the same management as hitherto.

British Order for Cast-Iron Pipes.

In face of severe Continental competition, the Staveley Coal and Iron Company, Ltd., have received an order for cast-iron pipes required in connection with the Cairo main drainage contract. The order comprises between 9000 and 10,000 tons of pipes, mostly 46 in. in diameter.

"Glamat" Lamp Protector.

An ingenious lamp protecting stamp, applicable to mantle glasses, &c., is marketed by I. Brook, of 27, Fairfax Road, Chiswick, W. 4. The "Glamat" stamp, as it is called, enables the owner of the lamps to mark his name on any desired number indelibly; and the mark cannot be removed by water, chemicals, heat, or scraping.

Aluminium Busbars and Connections.

In spite of the long use of copper as an electrical material, it is no longer the only metal worth consideration. In several branches of electrical engineering aluminium is now sufficiently well established to be counted as a serious competitor. The fact is brought out in a booklet on "Aluminium Busbars and Connections," published by the British Aluminium Company, Ltd., of Adelaide House, King William Street, E.C. 4.

A Net Price Booklet.

While the custom of pricing screwed and socketed tubes and fittings from an unchanging list adjusted by means of variable discounts is convenient, it has the disadvantage of making calculation necessary to arrive at net prices. A new booklet published by Messrs. Stewarts & Lloyds, Ltd., of Glasgow, has been prepared to do away with all necessity for calculation. It will doubtless interest our readers to know that such tables are obtainable.

Oxygen Plant for India.

Liquid Air, Ltd., Queen's Park Works, N.W. 6, report contracts for their new oxygen producing plants working on the air rectification principle, for the Indian Railway Companies, and for British motor cycle and motor car manufacturing companies. The method embodied in this plant enables the oxygen to be available at a sufficient pressure for all practical welding and cutting purposes, without the use of any secondary compressing unit. The firm maintain that, by the installation of a "Liquid Air" plant and an acetylene generator, the oxy-acetylene welding process becomes available at low cost.

A £500,000 Contract.

The Government of Sao Paulo have recently accepted the tender of Messrs. Braithwaite & Co. (Engineers), Ltd., for the construction of an "Armco" ingot iron pipeline for conveying water to a distance of 80 kilometres from the Rio Claro headwaters to a new reservoir to be constructed at Villa Prudents. The contract was obtained in the keenest open competition from both American and Continental competitors. It may be remembered that Messrs. Braithwaite & Co. recently completed the largest water pipeline ever constructed—namely, two 6-ft. diameter pipes, each 64 miles long, for the water supply of the Bombay Corporation. An interesting feature of the present contract is the decision of the engineers responsible for the design to return to the use of iron in place of steel. In the present case "Armco" ingot iron, which is an extremely pure iron made in an open hearth furnace, was adopted on account of its corrosion and rust resisting properties. The whole of the contract, which will involve the use of 25,000 to 30,000 tons of ingot iron, will be manufactured by Messrs. Guest, Keen, & Nettlefolds, Ltd., of Cardiff, and Messrs. the Scottish Iron and Steel Company, Ltd., of Glasgow, and will give employment in Great Britain to fully 2000 men for one year. The firms operating this contract, despite the difficulties created by the coal situation, have already commenced manufacture; and furnaces for "Armco" ingot iron have been started at both Cardiff and Glasgow.

Prompt Work at Plymouth.—To a letter entitled "Slack Officials," published in the "Western Morning News" for Sept. 28, the Editor appends the following note: Here is another remarkable illustration of municipal trading. In the middle of June a Mannamead resident, taking over a new house, was supplied with a new meter to enable him to have current for electric lighting. Necessary forms were filled up, also for the "power" supply for heating. Though we are now in the middle of September, the resident is still without the heating "power." On the other hand, the Plymouth Gas Company, two hours after receiving the notification, did what the Electricity Department have, so far, been unable to do in three months—two hours against three months.

NORTH-EAST COAST COAL TRADE.

From our Own Correspondent.

There is still no movement in the coal market, in spite of the general feeling that the end of the stoppage is approaching. There is no great pressure at present to buy coal forward, owing to the uncertainty of how the market will shape; and for the same reason collieries are not at all eager to quote. They will in most cases not commit themselves to definite prices; but indications, when given, are not such as to encourage buying.

Small transactions have passed in good Durham bunkers at 20s. f.o.b. for three months after the strike. Indications for second-class gas makes are in the region of 18s. 6d. to 19s., and better qualities mention 22s. 6d. Good Durham unscreened coking is offering at 18s. f.o.b. up to March. There is little doubt that there will be something of a rush for coal immediately after the resumption of work, but it is hardly expected that prices like these can be maintained very long.

COAL TRADE IN THE MIDLANDS.

From Our Local Correspondent.

Feverish competition has developed for domestic supplies throughout the Midlands. Till autumn chills began to stimulate demand from the householder, industries within easy reach of the coalfields of Warwickshire, Cannock Chase, and other parts of the Midlands where there had been a partial return to work, were favourably placed with regard to supplies. They are now feeling the pinch sorely, since the appropriations for household supplies and for the maintenance of essential services leave scarcely anything over for the manufacturer.

Merchants complain that the market has been bid up to an extravagant height, and they cannot get deliveries from the collieries unless they pay the maximum. For ordinary qualities of coal, 60s. was being demanded before last week had passed. Distributors said they were practically debarred from getting any return commensurate with the expense to which they were put. Birmingham manufacturers were so alarmed at the commandeering of the home output under the priority regulations that they sent a deputation to the Secretary for Mines to represent the serious consequences which it would have for industry, and insisting that it was unjust that trades which had already suffered grievously through the conflict in the coalfields, should now be offered the alternative of paying exorbitant prices for foreign fuel or come to a standstill. Mr. Lane Fox was sympathetic, but non-committal.

Foundries are now running on Continental coke, supplemented by small supplies from Durham, where the proximity of the cokeries to the North Sea puts them in the way of incoming consignments of coal suitable for coking.

YORKSHIRE AND LANCASHIRE COAL TRADE.

From our Local Correspondent.

The situation generally appears easier, with indications of a plentiful supply of good foreign gas coal.

Work is proceeding satisfactorily in the Midland areas so far as production is concerned; and it is anticipated that during the next fortnight collieries in Yorkshire will also be at work.

CURRENT SALES OF GAS PRODUCTS.

The London Market for Tar, Tar Products, and Sulphate.

LONDON, *Oct.* 4.

The demand from the Continent for pitch is increasing, and the price to-day is from 145s. to 150s. per ton f.o.b. makers' works, for shipment this year. Very little business is passing, however, owing to the great uncertainty as to the quantity that will be available for shipment.

In creosote there has been a further rise in the value, and to-day's price is about 8¼d. to 8½d. per gallon in bulk at makers' works.

There is slightly more inquiry for pyridine, the price of which is about 17s. 6d. to 18s. per gallon in bulk at makers' works.

Tar spirits remain firm at the prices last quoted.

Tar Products in the Provinces.

Oct. 4.

There has been a marked improvement in the prices of pitch in the past week, and contracts have been made for delivery this year and January/March next year at greatly improved prices.

Prices of other products remain about the same.

The average values of gas-works products during the week were: Gas-works tar, 102s. 3d. to 107s. 3d. Pitch, East Coast, 147s. 6d. to 150s. f.o.b. West Coast—Manchester, 140s. to 142s. 6d.; Liverpool, 142s. 6d. to 145s.; Clyde, 146s. to 148s. Benzole, 90 p.ct., North, 1s. 11d. to 2s.; crude, 65 p.ct. at 120° C., 1s. 4d. to 1s. 5d., naked at makers' works; 50-90 p.ct., naked, North, 1s. 11d. to 2s. Toluole, naked, North, 1s. 11d. to 2s. nominal. Coal-tar crude naphtha, in bulk, North, 9d. to 9½d. Solvent naphtha, naked, North, 1s. 9d. to 1s. 10d. Heavy naphtha, North, 1s. 1d. to 1s. 2d. Creosote, in bulk, North, liquid, 8d. to 8¼d.; salty, 7½d. to 7⅝d.; Scotland, 7⅜d. to 7⅝d. Heavy oils, in bulk, North, 7½d. to 7⅝d. Carbolic acid, 1s. 4d. to 1s. 5d. prompt. Naphthalene, £11 to £14; salts, 90s. to 100s., bags included. Anthracene "A" quality, 2½d. per minimum 40 p.ct., purely nominal; "B" quality, unsaleable.

Greenwich Barmaid's Dishonesty.—Dorothy Rixon, a barmaid, of Glenister Road, Greenwich, pleaded guilty at the Greenwich Police Court recently to obtaining by false pretences £4 6s. 4d. belonging to the South Metropolitan Gas Company, and to stealing two of the Company's dividend warrants, the property of F. Pope, a labourer.

Lighting Restrictions.

Misunderstanding appears to exist as to how far shop-fronts, cinemas, theatres, and restaurants may be illuminated under the Coal (Emergency) Directions, 1926 (Lighting), Act. Mr. F. W. Cable, Lighting Controller to the Westminster City Council, has drawn up an authoritative list of what may and what may not be done. The statement says that all lighting in shop windows during the daytime is forbidden, except when a special permit is obtained; and in view of the fact that a great many applications have been received, it is pointed out that the cases where such permission can be given are exceptional. It is not intended to sanction the lighting of shop windows in the daytime except where such lighting is necessary to conduct a particular class of trade, such as the exhibition of gems or articles habitually exhibited in artificial light. For shop-window lighting other than mentioned above, only a minimum number of lights necessary for the conduct of business must be used, and in no case must any light be used when the shop is shut, or in the daytime. In reference to restaurants, it is permissible to exhibit one light over the proposed menu in one instance only for each restaurant or hotel. At theatres, cinemas, music-halls, &c., the exhibition of the programme on a board with one light will also be permitted. Chemists are permitted to have one light outside showing the word "Chemist," or to exhibit one coloured light, but such light must not have upon it the name of the shopkeeper or advertise any goods for sale.

Rochester, Chatham, and Gillingham Gas Company.—The Directors of the Company have instructed Messrs. A. & W. Richards to offer for sale by tender £30,000 consolidated ordinary stock of the Company. The minimum price of issue is £92 10s. per £100, yielding at that price £7 0s. 6d. p.ct. Tenders should reach Messrs. Richards, at 37, Walbrook, E.C. 4, not later than eleven o'clock on Thursday, Oct. 7.

Erratum.—In our issue for Sept. 22 we gave a short summary of the exhibits at the exhibition of lighting appliances held at Newcastle in connection with the conference of the Institution of Public Lighting Engineers. We stated that Metropolitan Gas Meters, Ltd., displayed meters. As a matter of fact, this was not the case, as the firm showed various types of "Duplex" controllers, and confined their exhibit to gas lighting apparatus.

Accrington Gas Board.—On Sept. 23, Mr. A. J. Harrison, the General Manager, referred to the difficulty of maintaining an adequate gas supply. They had not had a ton of English coal for 141 days; and the adequacy of the supply depended on the quality of the foreign coal received. They would have given a normal supply, but when they had to meet a 25 p.ct. increase on normal supply their difficulties became much greater. Notwithstanding the increase in the price of gas at the end of the month, the coal strike would still mean a loss to the Board of £100 a day. They wanted the public to economize in the use of gas. They could not stand a 25 p.ct. increase in output when the capacity of the plant was reduced to 70 p.ct. owing to inferior coal.

Gasworker's Theft of Solder.—At the Greenwich Police Court, on Sept. 22, before Mr. Gattie, Henry W. J. Goldsmith pleaded guilty to stealing 60 lbs. of strip solder from the meter shop of the South Metropolitan Gas Company at Old Kent Road. Martin Darby pleaded guilty to receiving 56 lbs. of the metal. Mr. T. W. Hicklin, who prosecuted for the Gas Company, said the Company took a serious view of the matter, because of the many opportunities there were for pilfering metal at their works. Although employed in the meter shop, Goldsmith did not use solder. It was stated that Goldsmith was in receipt of a disability pension of £1 a week, and that his wage averaged about £3 6s. He had been employed by the Company since 1920. Darby was a man of good character, in casual employment. Mr. Gattie committed both men for three months without hard labour.

Welfare Departments.—The idea of keeping the staff together after working hours tends to promote a wholesome interest with regard to the social side of their well-being. It makes a man keen, and he goes about his work with greater zest, and with a desire to put his best into his work next day. The welfare department has, of course, other considerations besides the social side; but the social side is an important factor. A favourite form of recreation with workers of both sexes is miniature rifle shooting, in addition to lectures, whist-drives, dances, and concerts, which some welfare departments go in for. The local miniature rifle club is a great attraction, for it can be followed either indoors or outdoors, given a clear space of 25 or 50 yards for a range. For the long winter evenings it provides a successful form of amusement. A club can be formed with ten or a dozen persons, or more; while official recognition can be secured under the rules of the Society of Miniature Rifle Clubs by applying to the Secretary, 15, Arundel Street, London, W.C. 2.

American Comment on the Eltham Compulsion.—Referring to the revolt at Eltham of tenants on the Woolwich Borough Council's estate against the enforced use of electricity for cooking rather than gas, our American contemporary the "Gas Age-Record" says: The electric range has made but little headway in this country; but now in England it seems to have created a revolt in at least one case. Perhaps there are others. We have never heard of any attempts by legislation to make tenants in this country use electricity for cooking; but we do know that many people have been dissatisfied with the electric range, due to its high cost of operation and general inability to give the same service as does the modern gas range. Too often, those comparing the service of the two are comparing a new, well built, and well insulated electric range with an antiquated model gas range. Gas men should see to it that the merits of the modern oven-controlled range are so well known that there will be no such attempts as that at Eltham to make any American tenants use electricity against their wishes.

Rheinish-Westphalian Coal Syndicate.

According to the "Financial Times," the difficulty of the German coal industry to make full use of coke production which is beyond the requirements of German steel manufacturers has for some time been a serious problem. The Rheinish-Westphalian Coal Syndicate now has under consideration a project by which it hopes to overcome those difficulties, and at the same time assure for its members a share in the coal carbonization industry. This industry, it is feared, could easily be made another monopoly of the powerful chemical combine, the I. G. Farbenindustrie, which is the owner of the well-known Bergius patents, and a rival of the Rheinish-Westphalian Coal Syndicate. The Syndicate is reported to be about to form a new company for the utilization of the coal bye-products of its members. This company will acquire the right of another process of carbonization —namely, that of Geheimrat Fischer (of Mülheim)—which aims at the extraction of petrol from coke, instead of coal as by the Bergius process. The company will not at present make an appeal for public financial support, but will, until the experimental stage has been passed, be financed by the members of the Coal Syndicate. Another proposal of the new company is said to be the installation of gas pipes over long distances, to supply the gas surplus to the requirements of the works to nearby towns and villages.

British Industries Fair.—In view of the continuous demand for additional space at the British Industries Fair in Birmingham, the Birmingham Chamber of Commerce have found it necessary to make still further extensions to the Exhibition Buildings than those which it was believed would suffice only a fortnight ago. Plans have been passed for the immediate enlargement of the three main buildings, at a structural cost of about £30,000.

South Australian Gas Company.—In the annual report of the Directors, it is stated that the profit for the year ended June 30 amounted to £112,736. This has been applied in the following manner: Dividend for the half-year ended Dec. 31, 1925, at the rate of 8 p.ct. per annum, £36,218; dividend for the half-year ended June 30, at the rate of 8 p.ct. per annum, £40,000. Balance transferred to special purposes fund, £36,517.

Hereford Gas Undertaking.—The annual report of the Hereford City Council gas undertaking just issued states that 108 new consumers were registered during the year. There was an increase of £5388 in the receipts for gas supplied; and the year's working resulted in a gross profit of £6259. After deducting the sums required for interest and sinking fund in respect of loans, there remained a balance of £1732 to be added to the revenue account.

Results at Pontypridd.—The Pontypridd gas undertaking made a gross profit of £13,356 in the year ended March 31 last, as against £12,289 in the previous year. The net profit was £8228, compared with £5673. There were increases of 796 consumers, 445 cookers, and 145 gas fires; and the annual consumption of gas was greater by 8,404,859 c.ft., equivalent to 7·2 p.ct. The unaccounted-for gas was reduced by 1·5 p.ct. These results reflect great credit on Mr. David Muir, the Engineer and Manager.

Reduced Price at Elgin.—In spite of the increased cost of coal, the price of gas in Elgin is being reduced by 7½d. to 4s. 7d. per 1000 c.ft., making a total reduction in two years of 1s. 0½d. The present reduction has been made possible by the fact that, instead of an estimated loss on the year of £400, there was actually a profit of £2263. A suggestion to remove the site of the gas-works nearer the railway station, in order to save an annual cartage bill of over £500, has been remitted by the Town Council to the Gas Committee.

Leamington Priors Gas Company.—On Sept. 27, Dr. Harold Mason presided over the 123rd ordinary general meeting of the Company. He said the most gratifying feature of their accounts for the half-year to June 30 was the increased revenue from the sale of gas, which represented an increase of 5 p.ct. over the 1925 half-year. As a result of the coal strike, the Board had been compelled to increase the price of gas by 1¼d. per therm, or 6d. per 1000 c.ft., making the new price within the borough by ordinary meter 10d. per therm, or 4s. per 1000 c.ft.

Lewes Gas Company.—The half-yearly meeting of the Company was held on Sept. 29—Mr. A. W. Oke presiding. In their report the Directors stated that the revenue account showed a profit for the half-year of £2189. After providing for income-tax, interest on mortgages, &c., the balance of net revenue was £2571. It was recommended that dividends for the past half-year be declared at the rate of £5 p.ct. on the original capital stock, and £3 10s. p.ct. on the additional capital stock. These dividends (after deduction of income-tax) would amount to £1178. The Directors had, with the technical advice of Mr. C. F. Botley, undertaken some reconstruction of the works, commencing with the installation of a new gasholder. The foundations for this were nearly completed.

Results at Oswaldtwistle.—In his annual report, Mr. A. Amos, Manager of Oswaldtwistle Gas-Works, states that the gas sold was 108,008,000 c.ft.—an increase of 3,398,500 c.ft. on the previous year. The quantity sold for trade purposes showed a decline of 4¼ millions, due to the closing down of large works in the town. There was a decrease in unaccounted-for gas of 183,500 c.ft.; the total amount unaccounted-for being 9¼ millions, or 8·22 p.ct. The new retort house and carbonizing plant was opened last November, and was giving every satisfaction. There was a net profit of £1567, after allocating £1437 for interest on loans, &c. Of this, £1000 was devoted to rate relief, leaving £567 to carry forward. The reserve fund of £8180 was depleted by £5945 spent during the twelve months, leaving a reserve fund of £2802. The erection of new plant left the net indebtedness at £29,256, against £9774 at the end of the previous year. The average price for gas sold was 2s. 8·43d. per 1000 c.ft. Through the coal dispute, the Council had increased the charges by 4d. per 1000 c.ft.

Imperial Continental Gas Association.—The Directors intend shortly to declare, out of the ascertained profits of the half-year ended June 30, an interim dividend at the rate of 5 p.ct. actual on the £1,976,000 capital stock of the Association, payable, less income-tax, on Nov. 15.

Cookery Demonstrations at York.—The York Gas Company have arranged a series of gas cookery lectures and demonstrations, to be given at the Company's showrooms in Davygate, from Oct. 4 to 16 inclusive, every afternoon and evening. Miss M. K. Gompertz, of the Northern Counties Training College of Cookery, is the demonstrator.

Results at Colwyn Bay.—The statement of accounts of the gas undertaking of the Colwyn Bay Urban Council for the past year shows that the consumption of gas amounted to 169,680,700 c.ft.—an increase of 7 p.ct. The gross profit was £12,615. The loan charges were £9556, and the net profit was £3059—an increase of £429. There are now 4373 consumers—an increase of 237 during the year.

Watford Gas and Coke Company.—The seventeenth annual meeting of the co-partners of the Company was held at the gas-works last Friday. The Chairman of the Company, Mr. E. J. Slinn, presided. In moving the adoption of the accounts, he said they proved that the Fund had gone a long way towards realizing the ideal that the Directors and employees set before them at the inauguration of the scheme. Of the Company's stocks, £11,842 was now in the hands of the employees. Bonus and interest for the year amounted to £1187.

Exeter Gas Light and Coke Company.—At a special meeting of the shareholders of the Company—Mr. G. Hardy Harris presiding—a resolution was agreed to authorizing the Directors to issue 2350 £10 new ordinary shares, being part of the capital of the Company unissued, and also the sum of £20,000 debenture stock. The Chairman explained that the Directors did not propose to issue at present more than £10,000 of the debenture stock, but they were asking the shareholders to sanction £20,000. The Company had developed enormously during the last few years.

Deal and Walmer Gas Company.—In their report for the year ended June 30, the Directors state that the net profit for the year is somewhat less than in the previous year. The gas sold shows an increase of about 5 p.ct. over the previous year, and would have been greater but for the restrictions imposed owing to the strike. A further issue of capital to the extent of £12,000 was made in November last, and resulted in the amount being over-subscribed; the average price obtained being £103 5s. p.ct. The Directors recommend a dividend of 7½ p.ct. per annum on the last half-year—the same as the interim dividend paid in March last.

The Billingborough Gas-Works are unable to maintain a regular gas supply.

The Barrow-in-Furness gasworkers' billiards team played a match last week against Askam, and proved easy victors.

In view of the coal stoppage, the Dartmouth Gas Company have appealed to customers to exercise strict economy in the use of gas.

While working on the roof of a purifier house at the North Road Works of the Preston Gas Company on Sept. 29, Edward Overend fell a distance of 30 ft. He was removed to hospital suffering from severe injuries.

Owing to the prolongation of the coal dispute, the Birmingham Corporation Gas Department are compelled to suspend deliveries of coke and breeze, except to essential services, and to deal with cases of illness.

For 42 years there has been in the possession of the Coventry Corporation unclaimed certificates on the purchase of the gas undertaking in 1884 amounting to £192, upon which £114 interest has accumulated.

Mr. Harry Pitcher, who has completed half-a-century of service with the Eastbourne Gas Company as a mainlayer, has been presented by the Directors with an English lever watch and a silver albert chain, in commemoration of his long and faithful service.

Although there is every reason to expect a loss on the gas undertaking—and similarly on the electricity undertaking—owing to the coal situation, the Bingley Urban District Council have decided not to increase prices, in the hope that there will be an early settlement of the dispute.

The Blackpool Gas Committee have decided not to increase the price of gas, though the Gas Department have so far spent over £22,000 more than their estimates. Blackpool has 5156 slot gas meters, from which £21,206 was collected last year. The number of consumers with ordinary meters is 18,936.

Following the announcement of the Coal Restriction Order putting an embargo on exports to Ireland from British ports, a serious situation has arisen in Lisburn (Co. Antrim) at the Gas Department. A few days ago, the General Manager contracted for a supply of 500 tons; but this, owing to the Order, has been cancelled. If coal is not available within a week's time, it will be necessary to discontinue the supply of gas. In many other towns the situation is equally serious.

On Tuesday, Sept. 21, at a special meeting of the Gas Committee of the Belfast Corporation, the question was further considered of the proposed increased price of gas to consumers in view of the increased cost of coal owing to the coal strike, and the necessity of making foreign purchases. After full consideration, the Committee decided that a further recommendation should go forward to the City Council reaffirming the previous decision of the Committee, in view of all the circumstances that had been brought before them since the last meeting of the Council.

STOCK MARKET REPORT.

A MORE hopeful tone was in evidence on the Stock Exchange last week; and although the business done was not large, the news of the further return of miners to work led to an increased demand for Industrial shares. The Coal and Iron group established an all-round rise; and the Home Rail Market was distinctly better. The failure of the New South Wales issue, however, had a deleterious effect on the Colonial Market; but the fact that, as shown by the Midland Bank statistics, new capital amounting to nearly £16,000,000 was issued during the month of September, illustrates there is plenty of money available for investment. A very different reception attended the Hamburg loan, which was immediately over-subscribed, and dealings are expected to commence at about 1 premium.

In the Gas Market business was normal. Prices, however, were well maintained, and (as will be seen from the Table) there were few changes in quotations apart from *ex* div. markings. The only outstanding feature was a rise of 5 points in both the Uxbridge ordinary and Maidenhead 5 p.ct. stocks.

With the further increase in the price of gas announced by the South Metropolitan Company there has been comment on the dividend prospects. The complicated method of calculating the authorized dividend prevents any definite figure being determined until the end of the year; but it is anticipated that this will not be less than the 6 p.ct. paid for the year 1925.

The following transactions were recorded during the week:

On Monday, Commercial 4 p.ct. 78½, 3 p.ct. debenture 55⅝, European 6¼, Gas Light and Coke 84, 84⅜, 4 p.ct. preference 75¼, 75⅝, Imperial Continental 125½, Liverpool 7 p.ct. preference 103 13/16, Plymouth and Stonehouse 111, Primitiva 11s. 9d., 12s., South Metropolitan 91½, 92, South Suburban 5 p.ct. 97. Supplementary prices, British, Norwich, 4 p.ct. debentures 74½, Gas Light and Coke 5 p.ct. debenture 99½, Montevideo 6 p.ct. debenture 98¼, Wandsworth 4 p.ct. debenture 74⅜.

On Tuesday, Aldershot "C" 72½, Commercial 3 p.ct. debenture 56½, Continental Union 7 p.ct. preference 88, Gas Light and Coke 84¼, 84⅝, 84⅜, 3½ p.ct. 60½, 4 p.ct. preference 75½, 3 p.ct. debenture 58¾, Imperial Continental 126, Primitiva 12s. Supplementary prices, Brighton and Hove 5 p.ct. debenture 95, Gas Light and Coke 5 p.ct. debenture 99⅜, Grays and Tilbury 4 p.ct. deb. 70.

On Wednesday, British 105, Cape Town 7½, European 6, Gas Light and Coke 84, 84¼, 84⅜, 84⅝, 3½ p.ct. maximum 60¼, 4 p.ct. preference 75⅜, 76½, 3 p.ct. debenture 58½, Montevideo 80, 80½, Oriental 100¼, Primitiva 11s. 9d., 11s. 10½d., 12s., 12s. 1½d., 12s. 3d., 4 p.ct. (Buenos Ayres) new debenture 69¼, South Metropolitan 91½, 91¾, Tottenham "B" 91, Wandsworth, Wimbledon 5 p.ct. 100. Supplementary prices, Gas Light and Coke 5 p.ct. debenture 99½, 99⅜, Holyhead and North Wales 7s. 11½d., Sutton 105, 106.

On Thursday, British 7 p.ct. preference 117, Commercial 3 p.ct. debenture 55⅛, Croydon 96½, European 6¾ *ex* div., Gas Light and Coke 84, 84¼, 4 p.ct. preference 76¼, 77, 6 p.ct. debenture 104, Imperial Continental 127, 3½ p.ct. debenture 68, 68¼, Liverpool 7 p.ct. preference 103 *ex* div., Primitiva 12s., South Metropolitan 91¼, 91⅞, 92, South Suburban 5 p.ct. 96½, 5 p.ct. debenture 93, Tuscan 6 p.ct. debenture 65 *ex* div., Uxbridge, Maidenhead, 5 p.ct. 88⅜. Supplementary prices, British 3½ p.ct. debentures 62¼, Gas Light and Coke 5 p.ct. debenture 99⅝, Montevideo 6 p.ct. debenture 97¼, 98⅜.

On Friday, Bournemouth "B" 12 11/16, Brighton and Hove (10 p.ct.) 166, Commercial 3 p.ct. debenture 55⅛, Croydon 97½, European 6¼, Gas Light and Coke 84, 84⅛, 84¼, 84⅝, 84¾, 3 p.ct. debenture 58½, 59, 59½, 6 p.ct. debenture 104¾, Imperial Continental 127½, 128½, Maidstone 5 p.ct. 114, Primitiva 11s. 10½d., 12s., 12s. 1½d., 12s. 3d., South Metropolitan 91¼, 91⅛, 91¾, Southampton 5 p.ct. 78½, 79½, Tottenham 5 p.ct. 108, Tuscan 6 p.ct. debenture 67, Uxbridge 5 p.ct. 89½. Supplementary prices, Aldershot 7 p.ct. bonds 102½, Gas Light and Coke 5 p.ct. debenture 99⅝, 99⅜ (int. from Sept. 1, 1926), 100⅞ (int. from July 8, 1926).

As is usual during the few days preceding the end of the quarter, considerable stringency prevailed in Lombard Street, but the borrowing from the Bank of England was only on a moderate scale. High rates were bid for fresh loans on Thursday, and up to 6 p.ct. was occasionally paid. On Saturday, the Government disbursements released about 24 millions, and the market reverted to much easier conditions, loans being obtainable at as low as 3 to 3½ p.ct. Treasury Bills were more expensive to the Government; the average rate being £4 14s. 2·63d. p.ct., as compared with £4 12s. 9·75d. p.ct. the previous week.

In the Foreign Exchange Market, the fluctuations were unimportant. French francs were slightly weaker at 172⅞, and Belgian francs at 178¾. Italian lire closed at 129⅜, and Sterling on New York at 4.85 7/32.

There was a partial rally in Silver, and the price recovered 3/16 to 26 5/16d. per oz. Gold was lowered 1¼d. to 84s. 9¾d. per oz.

The Bank Rate is 5 p.ct., to which it was raised from 4 p.ct. on Dec. 3. Bankers' deposit rates are 3 p.ct. The deposit rates of the discount houses are 3 p.ct. at call and 3¼ p.ct. at notice.

Issue.	Share.	When ex-Dividend.	Dividends. Prev. Hf.Yr	Dividends. Last Hf. Yr.	NAME.	Quotations. Oct. 1.	Rise or Fall on week.	Transactions Lowest and Highest Prices.
£			% p.a.	% p.a.				
171,978	Stk.	Aug. 12	5	5	Aldershot 5 p.c. max. C.	72—75	..	72½
329,992	,,	,,	4	4	Do. 4 p.c. Pref.	65—70	..	..
1,851,868	,,	Sept. 30	6½	6½	Alliance & Dublin Ord.	88—88*	−2	..
374,000	,,	July 8	4	4	Do. 4 p.c. Deb.	67—70	..	..
300.000	1	May 6	1/7½	1/7½	Bombay, Ltd.	1 3/16—1 5/16	..	..
170 000	10	Aug. 26	8½	8½	Bournemouth 5 p.c.	11½—12½	..	..
500,050	10	,,	7	7	Do. B 7 p.c.	11½—12½	..	12 1/16
275,000	10	,,	6	6	Do. Pref. 6 p.c.	11—12	..	..
80.000	Stk.	June 24	3	3	Do. 3 p.c. Deb.	54—57	..	..
189.025	,,	,,	4	4	Do. 4 p.c. Deb.	74—77	..	..
214,740	,,	Aug. 26	12	12	Brighton & Hove Orig.	163—168	..	166
244,200	,,	,,	9	9	Do. A Ord.	125—130	..	..
1,387,500	,,	July 22	5	5	Bristol 5 p.c. max.	85½—86¼a	..	..
885,000	,,	Sept. 30	7	8	British Ord.	102—107*	−3	105
100,000	,,	June 24	7	7	Do. 7 p.c. Pref.	114—119	..	117
120.000	,,	,,	4	4	Do. 4 p.c. Red. Deb.	68—73	..	..
100,000	10	June 10	6	8	Cape Town, Ltd.	6½—7½	..	7½
100,000	10	Apl. 22	4½	4½	Do. 4½ p.c. Pref.	6—7	..	..
150,000	Stk.	June 24	4½	4½	Do. 4½ p.c. Deb.	68—73	..	..
626,860	,,	July 22	6	6	Cardiff Con. Ord.	94—97	..	..
337,860	,,	June 24	7½	7½	Do. 7½ p.c. Red. Deb.	99—102	..	..
157,150	,,	Aug. 12	6¼	5	Chester 5 p.c. Ord.	88—93b	..	..
79,185	1	Sept. 30	†2/-	†2/-	Colombo Ltd. Ord.	27/—29/-*	−1/-	..
734,495	1	,,	1/4⅜	1/4⅜	Do. 7 p.c. Pref.	20/—22/-*	..	..
1,518,280	Stk.	Aug. 12	5⅝	5⅝	Commercial 4 p.c. Cap.	77—80	..	78½
560,000	,,	,,	5/8¾	5/8¾	Do. 3½ p.c. Cap.	74—77	..	..
475,000	,,	June 24	3	3	Do 3 p.c. Deb.	55—58	..	55½—56½
800.000	,,	Sept. 30	2	1	Continental Union, Ltd.	26—31*	−1	..
200,000	,,	,,	7	7	Do. 7 p.c. Pref.	82—85*	−3	88
737,150	,,	Aug. 12	6½	6½	Croydon sliding scale	95—98	..	96½
403,100	,,	,,	5	5	Do. max. div.	78—81	..	..
492,270	,,	Aug. 26	9	6	Derby Con.	107—109c	..	..
65,000	,,	June 24	4	4	Do. Deb.	73—75c	..	..
209,000	,,	Sept. 16	5	5	East Hull Ord. 5 p.c.	84—87	..	..
50,000	,,	June 24	5	5	Eastbourne 5 p.c. Deb.	91—96	..	..
1,002,180	10	Sept. 30	†4	†6	European, Ltd.	6—7*	+¼	6—6⅝
18,788.960	Stk.	Aug. 12	4/17/4	5/1/4	Gas Light & Coke 4 p.c. Ord.	84—86	..	84—84⅝
2,600,000	,,	,,	3½	3½	Do. 3½ p.c. max.	58—61	..	60½
4,157.020	,,	,,	4	4	Do. 4 p.c. Con. Pref.	74—77	..	75½—77
5,602,620	,,	June 24	3	3	Do. 3 p.c. Con. Deb.	58—61	..	58½—59½
181,315	,,	,,	—	—	Do. 6 p.c. Br'tf'd Rd. Db.	100—105	..	104—104½
180,000	,,	—	10	10	Do. 10 p.c. Bonds.	..	..	..
42.000	,,	—	7½	7½	Do. 7½ p.c. Ilford Deb.	..	..	..
89,500	,,	Aug. 26	6⅔	6⅔	Hastings & St L. 5 p.c. Conv	87—92	..	..
258,740	,,	,,	5⅔	5⅔	Do. 3½ p.c. Conv.	66—71	..	..
70.000	10	June 10	†10	†10	Hongkong & China, Ltd.	19½—20½	..	..
173.200	Stk.	Sept. 16	5	5	Hornsey Con. 3½ p.c.	67—69	..	..
1,976.000	,,	May 20	10	‡10	Imperial Continental Cap.	125—130	+2	125½—128½
226.170	,,	Aug. 12	3½	3½	Do. 3½ p.c. Red. Deb.	68—71	..	68—68½
235.242	,,	Aug. 12	6½	6½	Lea Bridge 5 p.c. Ord.	92—97	..	..
2,127.840	,,	Aug. 12	5½	5½	Liverpool 5 p.c. Ord.	73—79b	−1	..
600.000	,,	Sept. 30	7	7	Do. 7 p.c. Red. Pref.	100—102b*	−2½	103—103 13/16
165,736	,,	Aug. 26	9	8	Maidstone 5 p.c. Cap.	112—117	..	114
69.480	,,	June 24	3	3	Do. 3 p.c. Deb.	53—58	..	..
75,000	5	June 24	†6	†7	Malta & Mediterranean	5⅛—5⅜	..	..
541,920	Stk.	May 20	†4	†6	Montevideo, Ltd.	79—82	..	80—80½
2,061,315	,,	Aug. 12	5	5	Newcastle & Gateshead Con.	70⅜—71½d	−¼	..
360.929	,,	,,	4	4	Do. 4 p.c. Pref.	73—74d	..	..
529,705	,,	June 24	3½	3½	Do. 3½ p.c. Deb.	67¼—68⅛d	..	..
15,000	,,	Aug. 26	11½	11½	North Middlesex 10 p.c.	151—156	..	..
91,530	,,	,,	8 5/9	8 5/9	Do. 7 p.c.	109—114	..	..
900,000	,,	May 6	9	7	Oriental, Ltd.	97—102	+1	100½
188,120	,,	June 24	7⅛	7⅛	Plym'th & Ston'house 5 p.c.	108—113	..	111
414,500	,,	Aug. 26	—	7/4/0	Portsm'th Con. Stk. 4 p.c. Std.	102—107	..	..
236,782	,,	,,	—	5/0/0	Do. 5 p.c. max.	78—81	..	..
2,289,909	1	,,	—	—	Primitiva Ord.	11/6—12/6	..	11/9—12/3
282,200	100	June 1	4	4	Do. 4 p.c. Red. Deb.	83—85	..	..
600,000	Stk.	July 22	4	4	Do. 4 p.c. Red. Deb. 1911	69—71	..	..
180,306	,,	June 24	4	4	Do. B. Aires 4 p.c. Rd. Db.	69—71	..	69½
256,847	,,	,,	4	4	Do. R'r P'te 4 p.c. Rd. Db.	69—71	..	..
150,000	10	Sept. 30	6	6	San Paulo 6 p.c. Pref.	7½—8*	−½	..
125,000	50	July 1	5	5	Do. 5 p.c. Red. Deb.	46—49	..	..
270.000	Stk.	Sept. 16	6	5⅝	Sheffield A	98—100e	..	..
419.968	,,	,,	6	5⅝	Do. B	98—100e	..	..
1,017.000	,,	,,	6	5⅝	Do. C	98—100e	..	..
90,000	10	June 11	4	—	South African	5—7	..	..
6,609,893	Stk.	Aug. 12	7	5	South Met. Ord.	90¼—92½	..	91½—92
1,895.445	,,	July 8	3	3	Do. 3 p.c. Deb.	57—60	..	..
734.000	,,	Sept. 16	6½	6½	Do. 6½ p.c. Red. Db.	100—102	..	..
91.500	,,	Aug. 12	8½	8½	South Shields Con.	114—116d	..	..
1,187.795	,,	Aug. 12	6⅔	6⅔	South Suburban Ord. 5 p.c.	96—99	..	96½—97
368,887	,,	June 24	5	5	Do. 5 p.c. Deb.	92 95	..	93
647.740	,,	Mar. 18	5	5	South'mpton Ord. 5 p.c. max.	77—80	..	78½—79½
121,275	,,	June 24	4	4	Do. 4 p.c. Deb.	68—73	..	..
350,000	,,	Aug. 26	7	7	Swansea 7 p.c. Red. Pref.	100—102	..	..
200,000	,,	June 24	6½	6½	Do. 6½ p.c. Red. Deb.	100—102	..	..
120,000	,,	July 22	7⅛	7⅛	Tottenham District A 5 p.c.	105—110	..	108
689.275	,,	,,	5½	6¼	Do. B 3½ p.c.	88—91	..	91
150,000	,,	,,	5½	5½	Do. 5½ p.c. Pref.	99—101	..	..
181,255	,,	June 10	4	4	Do. 4 p.c. Deb.	78—76	..	..
258,251	,,	Aug. 26	5	5	Tynemouth Con. and New	66—67d	..	..
197,294	,,	Aug. 26	6⅔	6⅔	Uxbridge, Maidenhead, & Wycombe 5 p.c.	85—90	+5	..
88.880	,,	,,	5	5	Do. 5 p.c. pref.	80—85	..	..
91,800	,,	,,	6⅔	6⅔	Do. 5 p.c. Maidenh'd	85—90	+5	88½
30,000	,,	July 8	8½	8½	Wandsworth, Wimbledon, and Epsom— Wandsworth A 5 p.c.	122—127	..	..
255,636	,,	,,	7	7	Do. B 3½ p.c.	102—107	..	..
412,450	,,	,,	5/19/0	5/19/0	Do. C and New	88—93	..	..
352,000	,,	,,	6⅔	6⅔	Wimbledon 5 p.c.	98—103	..	100
98,000	,,	,,	7⅛	7⅛	Epsom 5 p.c.	104—109	..	..
88,416	,,	June 24	3	3	3 p.c. Deb.	54—57	..	..

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